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Australasian Medical Congress (British Medical Association)

Dunedin, 1927.

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An Address.[1]

By L. E. BARNETT, C.M.G., M.B., Ch.M., F.R.C.S.,

President of the Australasian Medical Congress (British Medical Association).

I AM deeply sensible of the honour that has been conferred upon me in electing me President of this great Congress, which is representative of the medical profession of the whole of Australia, New Zealand and the outlying islands, the British Empire in the Pacific Ocean, and I thank you, Sir George Syme, for your kind and encouraging and flattering words in passing on to me the office which you have so conspicuously adorned. I shall find it difficult to live up to the high standard of presidential duty and performance that you have set me.

I welcome you all to Dunedin which is to be the scene of your labours and of some of your recreations. Those of us who are Dunedin folk, are proud of our home town, with its hills and bush, its gardens and seas. We think it has the makings of an attractive residential and university city and we hope you will enjoy your stay amongst us.

I wish to express on behalf of the Congress our gratification at seeing here the Honourable Mr. W. Downie Stewart, Acting Prime Minister for the Dominion of New Zealand, and the Honourable Mr. J. A. Young, Minister of Public Health.

It gives us great pleasure also to have with us the accredited representative of the British Medical Association, Dr. Cooper Pattin, of Norwich, whose distinction in the field of public health renders his visit to a congress of this kind particularly appropriate.

[1] Being the President's Inaugural Address at the Second Session of the Australasian Medical Congress (British Medical Association) delivered on February 3, 1927.

We are pleased and honoured also at having with us Dr. George Piness, of Los Angeles, the medical representative of the United States of America, a country whose magnificent scientific achievements and generous hospitality are known to most of us.

Very special welcome is due to those of our Australian visitors who were with us in Dunedin in February, 1896, exactly thirty-one years ago, at the very first Australasian Medical Congress ever held in Dunedin, and who have again crossed the Tasman Sea to take part in our proceedings.

I refer to Sir George Syme and Dr. A. L. Kenny, of Melbourne, Dr. Donaldson, of Linton, and Dr. Long, of Bendigo.

The New Zealand survivors of that Congress of long ago remember the valuable help that these men rendered to our meeting. We were glad to have them with us then; we are doubly glad to have them with us now.

It is sad to reflect that more than half of the members of the 1896 Congress have passed over to the great beyond. We deplore the deaths, particularly of many of our distinguished officials, including the President, Dr. F. C. Batchelor, the Secretary, Dr. John Halliday Scott, also Sir Harry Brookes Allen and Sir Charles Ryan.

Better men it would be hard to find.

Medical Ideals and Lay Criticism.

At the time I speak of and for long after the Australasian Medical Congress was held every three years, independently of any other organization; but beginning with the medical congress held in Melbourne a little over three years ago, it has merged itself voluntarily and I think wisely in the British Medical Association. It has thus become part of a great imperialistic, scientific institution of which His Majesty, King George V., is Patron.

Hear the words of the King when in company with Queen Mary he honoured the whole medical profession and demonstrated his goodwill towards the British Medical Association by opening their new spacious and dignified home in Tavistock Square, London, on July 18, 1925:

> I am pleased to come here today accompanied by the Queen to open the new and admirably designed House of the British Medical Association. We have always taken a sincere interest in the science and practice of medicine and surgery and I am proud to have succeeded my Father, King Edward, as Patron of your Association. Since its foundation nearly a century ago by Sir Charles Hastings your Association has shown a remarkable increase both in membership and usefulness and the well-informed and constructive criticism that it brings to bear upon the evolution of your profession is of great value. The British *Medical Acts* wisely restrict admission to the Medical Register to those who have been trained in accordance with prescribed regulations and have passed the necessary qualifying examinations. At the same time, vigilance must always be exercised in order that your profession may keep abreast with the advance of science and also preserve a high standard of professional practice and ethics. The noble purpose, the character and the skill of those engaged in the art of healing are your most precious traditions and you do well jealously to watch over such attributes.

It is a comforting reflection to us of the British Medical Association to feel that the majority of the people are of the same opinion as their sovereign in regard to the maintenance of the high ideals and traditions of medical practice. Nevertheless, we have repeated and very obvious indications that there are quite a number of people who do not see eye to eye with us, and we have to face at times very bitter antagonism towards a policy that has been devised conscientiously and with infinite pains to safeguard the interests of the general public equally with those of ourselves.

There are many who mock and deride us for our subservience to what they call a ridiculous code of medical etiquette. Funny stories about doctors are even more popular than Aberdonian anecdotes and help to fill many an odd space in magazines and newspapers. We sometimes get amusement out of them ourselves and they at any rate do us no harm. There are some who criticize us in frank and fearless fashion, but withal reasonably and often usefully. Hostile criticism, if it is reasonable, has a more purifying and stimulating effect than friendly adulation. "A friendly eye does never see such faults" and the medical profession makes no claim to be faultless. Far from it; we are made of common clay just like other folk. We sometimes stand in need of correction. Our little medical parliaments are as liable as the greater parliaments of the people to make blunders and that is certainly a fair admission of human limitations, of human error, of human frailty. Criticism by an opposition party is a good thing in the people's parliament, just as it is a good thing in the parliament that deals with the doings of doctors. We must give consideration to the honest and reasonable criticism of the opponents of our policy, whether that criticism comes from lay or medical sources.

But we cannot help feeling resentment at the publication of gross and unwarranted statements that heap indignities upon us, that accuse us of rank dishonesty, allegations, for instance, that we are a great trades union whose chief aim is to keep the wages of its doctor members at the highest possible level, that we strangle competition by keeping out of this union the numerous and wonderful unorthodox healers who have not conformed to our requirements of a thorough medical education, that we advocate vaccinations, operations, inoculations, animal experiments and so on, not for the sake of suffering humanity, but for the benefit of our sordid selves, that we give gratuitous service to the hospitals and sick poor only because it gives us prestige and a free advertisement, that is to say, we climb over the backs of the poor into the pockets of the rich.

I have the impression that these intensely bitter and vociferous critics of ours are not only mentally perversely active, but also uncommonly healthy in body and that consequently they have not had their crude conclusions confounded by any dangerous and painful malady, accompanied by the soothing ministrations of a capable doctor. I feel certain, for instance, that if Mr. George Bernard Shaw who, though undoubtedly a dramatic genius, is always vituperative where doctors are concerned, had at any time suffered from a perforated duodenal ulcer or a gangrenous appendicitis or a pleurisy with

effusion, he would not have written so mordantly and cynically about medical practice.

We judge it wise to refrain from responding in the lay press to calumniations of this kind. The piquant controversies that otherwise would arise could produce nothing but confusion. We are quite prepared to be judged by the majority. Let our lives and our actions suffice to discredit our detractors.

It has been said that human destiny is largely in the hands of the medical profession. Whether this be so or not, we must not fail to realize the sacred duty that devolves upon us, namely, the medical care of the most wonderfully beautiful and intricate living thing on earth, the human body and with it the human mind and even the human soul. We know that Nature, if unhindered by harmful customs imposed by a too luxurious civilization, can cure most illnesses and heal most wounds in human beings, just as is the rule in lower animals. We know and we preach that if people lived a more natural life from the prenatal stage onwards through babyhood to adult life, if they took more advantage of those priceless tonics, sunshine and clean, dust-free air, if feeding was more rational as regards quality, quantity, temperature and periodicity, if the drinking of alcohol was not abused, if teeth were looked after, and food well masticated and if they earned their meals by a fair measure of exercise, there would then be much less necessity to resort to the ministrations of the physician and the surgeon, to the nostrums and cure-alls of the proprietary drug vendors or to the hocus pocus of quackery.

But we doctors know that there remains a considerable and serious proportion of cases of illness, virulent microbic infections, tumours and cancers, grievous injuries and mechanical disabilities with which Nature unaided cannot cope, troubles which may at first seem slight and unimportant, but which have tragic possibilities, troubles which may, on the other hand, be overwhelming from the very outset. Not individuals alone, but whole communities suffer disaster if troubles of this degree of gravity are allowed to progress unchecked. Disease and degeneration, injuries and ill-habits and other health-destroying agencies are numerous and often complex, obscure and difficult to control. To prevent and to conquer these malign influences and to repair the ravages of illness and injury, a defending army of selected, educated and trained doctors has been organized, an army which has for its headquarters staff, its board of control, its disciplinary body, the General Medical Council and the British Medical Association.

These assemblies have always included medical representatives of eminence and special fitness for their duties. Quite recently in deference to public opinion a lay member has been added to the General Medical Council, namely Commander Hilton Young, a distinguished English politician and one of the heroes of the Zeebrugge naval attack. Lay representation on the Council is, I think, a wise provision, calculated to allay public distrust in the pronouncements of that important body.

We have, in the course of long years, evolved a scheme of medical education and training, of efficiency examinations, of ethical regulations, of safeguards against injustice, of post-graduate study and research, of preventive measures for the lessening of disease and the control of epidemics. We benefit in many ways by such a scheme, but the public benefit still more. We have the public welfare at heart just as much as, if not more than our own and that is a point which deserves reiteration.

Moreover, we do not try to interfere with public liberty. A sick man or a man who thinks he is sick, is not bound to come to one of us for treatment. He can choose a layman if he wants to; he can have the drains of his own precious body, his stomach, his bowels, his kidneys and whatnot, tinkered with by an ill-educated, self-styled healer who has not the haziest idea of the intricate mechanism of these essential organs; yet if he wants the pipes, drains or sewers of his house looked to, the law insists that he must employ a man specially trained and certified for the job—paradoxical but true.

There are a lot of peculiar people in the world who do not believe in doctors. Peculiar people have peculiar reactions and they actually do sometimes get more benefit from an unorthodox practitioner, an unqualified disciple of some weird cult or even from a rank impostor than they would from an educated and highly qualified doctor. That is a fact with a psychological basis. And so we let patients please themselves. If they do things that are too ridiculous to be tolerated, they may be censured or punished, but not by us; a lay magistrate usually attends to that.

Community service in the domain of preventive medicine, whereby the incidence of disease may be lessened and many doctors thereby rendered superfluous, has been rightly placed in the forefront of the recommendations of the General Medical Council and the British Medical Association. At this and at every British Medical Association conference public health questions will be given the greatest prominence.

We anticipate that our discussions on goître and hydatid cysts will result in a very decided lessening in the frequency of these troublesome and yet largely preventible maladies.

We shall endeavour to stimulate and correlate cancer research in the various Australasian centres. Although far more cases of cancer are cured now by operative and radiological means than in former years, chiefly because the patients are learning the wisdom of seeking treatment when the disease is in its early stage; yet, owing to the increasing prevalence of this still mysterious malady, the total death rate from cancer keeps mounting higher and higher. Yes, the cancer problem is still with us, but ever nearing solution as a result of intensive labour in a hundred fields.

I take this opportunity of congratulating the University of Sydney on the generous response of the people of New South Wales to its appeal for a Cancer Campaign Fund. With a sum of well over £100,000 a splendid plan of research can be instituted and I only hope that other scientific centres in Australasia, including Dunedin, may have the same good fortune.

And cancer is one only of many devasting diseases that call for intensive study. The governments in every civilized country now regard it as their bounden duty to encourage research that has for its object the betterment of the public health. The Royal Commission on Health for Australia, so ably presided over by Sir George Syme, have recently reported the conclusions of one of the most valuable investigations into public health matters that has ever been made and one of their recommendations and a very significant one, is that a health research council should be established and provided with an endowment of £30,000 *per annum*.

We shall at our meetings give detailed attention to the important subjects of maternal and infantile mortality, of tuberculosis and of certain tropical diseases of great public concern in northern Australia and the Pacific Islands, to questions concerning diet in health and sickness and to many other matters of special interest from the preventive medicine point of view.

I must refer also and I do it in optimistic vein, to the proposed inauguration during the currency of this Congress of the Australasian College of Surgeons, because I believe that such a college is likely to have a valuable influence on the public welfare and because I have for some years been trying to mould professional feeling in New Zealand towards something of this kind. The promoters will endeavour to combine the good points of the Royal Colleges of Surgeons of the British Isles with those of the more recently founded American College. The aims are to raise the standard of surgical efficiency, surgical endeavour and surgical ethics in both hospital and private practice and to encourage the provision of facilities in hospitals, whereby a sufficient number of suitable men can be specially trained to undertake the responsible duties of a surgeon.

In Great Britain it is quite exceptional for anyone without special training and experience to do major operations, but in the newer countries, like America, Australia and New Zealand, there is not the same restriction. In these countries major operative work is quite commonly undertaken by men who, though adequately equipped with what is popularly called nerve, lack in varying degree that knowledge and experience which are requisite in deciding such questions as: (i.) Is an operation really necessary? (ii.) When should the operation be performed? (iii.) How are the unanticipated difficulties and complications to be handled? (iv.) How should the scope of the operation be limited or extended according to circumstances?

I do not insinuate that the only competent surgeons will be those who are fellows of a college. For various reasons a man who really is a good surgeon, may not wish or may not be in a position to obtain a hall mark of this kind. The patient's choice will be unfettered. If he selects an operator who is not a fellow of a college, he may or may not get a properly trained man, but if he does choose a fellow of a college, he can rest assured that he has the services of a fully trained surgeon.

The greatest care should be exercised in the selection of the junior and senior staffs of our hospitals for many reasons and one of them has to do with the supply of trained surgeons to the community. The recognized recipe for the making of a surgeon is to take a young man who shows both intellectual ability and manual dexterity and place him in an approved hospital, first as a house surgean and then as assistant surgeon for several years. The passing of a high-grade academic examination is desirable, but is not essential to the performance of high-grade surgery. The main thing is good hospital work, at first under supervision and later independently.

As I said before, it is often alleged that doctors give their gratuitous services to the sick poor in hospitals for purely selfish motives, that it pays them indirectly, that the experience and prestige they gain are splendid advertisements for a lucrative practice and that consequently these honorary appointments are eagerly competed for. Now there is a measure of truth in all this, but it is not the whole truth. Painstaking, skilful and kindly hospital work does materially help in the building up of the very best class of private practice. But the kind of advertisement a hospital gives is similar to that of a shop window, exhibited, however, not to the public generally, but to those only who know the worth of the articles displayed. When a surgeon or a physician habitually shows work of good quality within a hospital, it is appraised accordingly by competent observers, that is to say by his colleagues, his students and his nurses. If, on the other hand, his work is habitually faulty, then instead of a good advertisement he gets a bad one. A hospital appointment may place a man in consultant rank, but only if he is worthy of it. The public benefit enormously by this automatic method of grading medical practitioners through the medium of their gratuitous hospital service.

Modifications in our hospital systems are now receiving serious consideration, largely stimulated by the investigations and reports of Dr. MacEachern, the American expert on hospital standardization. I hope that many of his valuable suggestions will be adopted and in particular I would like to see our public hospitals made available to all classes, but with the proviso that the sick poor shall continue to have the gratuitous services of an honorary staff in accordance with the honourable traditions of the profession. For in this as in all things we must jealously guard the great heritage of public esteem and public confidence that we owe to our predecessors.

In conclusion, let me quote what was said about us by the Right Honourable Neville Chamberlain,

the Minister of Health, speaking at the London Hospital a few months ago:

No one could doubt the fundamental seriousness of mind of any practising surgeon or physician. I do not mean that doctors have no sense of humour; God forbid! Their worst enemies have not accused them of that, but inevitably there must be in them in a serious vein. They must feel that their calling is something beyond a mere means of earning one's livelihood, that they have a purpose in life which is neither selfish nor superficial and that they concern themselves not only with the cure of the individual but with the much wider task of trying to improve the general health of the people.

Ladies and gentlemen, that is the kind of criticism that is sweet to our ears; let us show that we of today are worthy of it.

Inaugural Meeting.

THE second session of the Australasian Medical Congress (British Medical Association) was formally opened in the Early Settlers' Hall, Lower Stuart Street, Dunedin, on February 3, 1927, by the HONOURABLE W. DOWNIE STEWART, the Acting Prime Minister of New Zealand, SIR GEORGE SYME occupied the chair.

MR. DOWNIE STEWART extended a warm welcome to the members attending the Congress in the name of the Government. He referred to the fact that the President, Dr. L. E. Barnett, and several members had been present at the fourth session of the Intercolonial Medical Congress in Dunedin in 1896, thirty-one years before. Dr. Barnett had been one of the Honorary General Secretaries of that session. He eulogized Dr. Barnett as a surgeon and as a citizen. After defending the holding of medical congresses, he referred to the suitability of Dunedin for that purpose. Dunedin and other New Zealand cities were of moderate size and were not embarrassed by the usual associatfon of large cities, vice, squalor and crime. The New Zealand pioneers had come of the best Anglo-Saxon stock, capable and reliant. They had striven to maintain a high standard of life and had retained happy relations with the Maori race. This race was the only native race that had not declined as a result of contact with Europeans. He wished all a prosperous and successful session and expressed the hope that the visitors would form an accurate and pleasing impression of the country.

THE HONOURABLE J. A. YOUNG, Minister of Health, supported Mr. Stewart in welcoming the members of Congress.

SIR. GEORGE SYME sketched the history of the medical congresses in Australia since their inception as the Intercolonial Medical Congress in 1887 when the first session had been held in Adelaide. He paid a tribute to the warmth of the welcome that had been extended to the Australian members thirty-one years previously in Dunedin and he stated that there were indications that the abundance of hospitality of the Dunedin citizens would be still greater on the second occasion. He concluded his speech by introducing Dr. L. E. Barnett to the chair of the Australasian Medical Congress (British Medical Association).

President's Address.

DR. L. E. BARNETT read messages of goodwill from His Excellency the Governor-General of New Zealand, from Dr. Alfred Cox, Medical Secretary of the British Medical Association, and from Mr. Dennison, the Honorary Secretary of the New Zealand Dental Association.

He then delivered his address (see page 423).

Popular Lecture.

The Coming of the Maori.

DR. PETER BUCK (TE RANGI HIROA) in the course of his popular lecture on the coming of the Maori set up the thesis that the Maoris originally belonged to the Caucasian race. He suggested that the tribe had migrated from the south-eastern corner of Europe towards the East Indies and had proceeded to the South Seas and thence to New Zealand.

The date of departure of the last colonizing group of canoes from Hawaiki in Tahiti to New Zealand has been approximately fixed as 1350. This had been calculated from the average number of generations from various ancestors who had come in those canoes. The time of the year in which the canoes set sail, was of great traditional interest. According to the version from the Takitimu canoe, the branch or division of the year was *Tatau-uru-ora*. From the Maori calendar this corresponded roughly with November. The Polynesian months were divided into nights and not days as with Europeans. The night of the month on which the canoes left was the *Orongonui*. This in most Maori tables was the twenty-eighth, but in some it was the twenty-seventh.

Further confirmation of the date of sailing came from tradition supported by botany. Early European navigators in observing the sailing powers of Polynesian seagoing canoes with a fair wind, had stated that seven knots an hour was easily accomplished. From this Mr. Elsdon Best had shown that the journey from Rarotonga would take about fifteen days. If the canoes left for New Zealand toward the end of November, they must have reached their destination by the middle of December. Various canoes of the fleet shared the common tradition that when the fleet made their landfall at Whangaparaoa in the Bay of Plenty, the shores were ablaze with the scarlet blossoms of the *pohutukawa*. This was embodied in Maori tradition; one of the chiefs was said to have cast his red head-dress or *kura* into the sea, saying: "There are *kura* in abundance in the new land that lies before us." The *pohutukawa* was in full bloom during December. Thus Maori and Rarotongan traditions supported each other and were further confirmed by the flowering of the *pohutukawa*.

The arrival of the Maori was part of the history of New Zealand; the Maoris and New Zealanders, he contended, were one. The Maoris were proud of the traditions that had been handed down to them and the residents of New Zealand should be proud of any traditions that would add to the common store of knowledge. The history of the Maori and of the Polynesians should be taught to the children in the public schools so that they might understand something about the race from which the Maoris had descended, and realize that they were worthy citizens of the country.

The Sections.

THE following is a summary of the proceedings of the Congress. There were twelve Sections. On each of the four days combined meetings were held of two or more Sections. In view of the scheme on which the session was planned, the proceedings are given in chronological order, the combined meetings being placed before the meetings of individual Sections. A final meeting of the members of Congress was held on Thursday, February 10, 1927, for the purpose of discussing the matters that had been remitted from the Sectional meetings to the Executive Committee.

FRIDAY MORNING, FEBRUARY 4, 1927.

COMBINED MEETING.—SECTIONS I., II., IV., V. AND XII.

Goitre.

PROFESSOR C. E. HERCUS (Dunedin) read a paper dealing with the incidence, ætiology and prevention of goitre in New Zealand. Goitre incidence was usually determined by examining some readily accessible section of the community such as school children. He and Dr. Eleanor Baker had found in 1920 in a survey of 30,000 children from Canterbury and Westland that 30% had well defined goitres. The incidence in boys and girls was equal up to the age of puberty and after that the female incidence rose rapidly. The hereditary factor was an important one.

Goitre was more abundant on the more or less gravelly plains and river flats and along the narrow flood plains of the large rivers. In the previous ten years 403 deaths had been due to toxic goitre and 344 of the patients had been females. In the same period 3,081 patients with thyreoid disease had been treated in public hospitals, 39·3% of the total admissions had been due to toxic goitre and 42·4% to simple goitre.

In regard to ætiology it appeared from what little evidence that was available in New Zealand, that the cause operated independently of race. Water did not appear to be a factor. Calcium did not appear to be an important factor. Although there was experimental evidence apart from the iodine factor that excessive protein or excessive fat might produce thyreoid enlargement, the diet was fairly uniform throughout the country. There was no evidence to suggest the existence of any specific infective agent as the primary cause of goitre nor was there any evidence that the inhabitants of endemic areas had any specific intestinal flora whose toxic products injured the gland directly or combined with the iodine in the food, thus preventing its assimilation. Field work in connexion with this subject had established striking differences in district incidence and it had been found that the iodine in the soil bore an almost inverse relationship to the incidence of goitre. It had been shown experimentally that the power of the soil to retain iodine in spite of the washing action of water depended largely on its colloidal state. Professor Hercus then discussed the iodine content of foodstuffs. He compared the iodine content of food from different districts and concluded that the hypothesis that goitre is caused by a deficiency of iodine had been fully sustained.

In regard to treatment Professor Hercus said that the primary factor in causation of goitre in New Zealand was a deficient intake of iodine. This had been shown to be in the neighbourhood of fourteen microgrammes. The raising of the iodine intake in affected districts was fraught with many difficulties. The greatest danger arose from the indiscriminate use of iodine in a community containing a large number of people with potentially toxic goitres. The wide sale of proprietary remedies containing iodine was dangerous and it was no wonder that toxic goitre was increasing in the community. Professor Hercus discussed the various methods of supplying iodine to the community and instanced the results that had been obtained by the administration of sodium iodide to school children. He laid great emphasis on the necessity for the compulsory iodizing of all cooking and table salt. According to the New Zealand *Food and Drugs Act* iodized salt should contain one part of potassium iodide to 250,000 parts of salt. Failing the compulsory use of iodized salt he recommended a vigorous educational campaign on the correct use of iodized salt and the warning of the public of the dangers associated with the indiscriminate use of iodine.

DR. HARVEY SUTTON (Sydney) read a paper on the incidence, ætiology and prevention of thyreoid enlargement in Australia. He said that simple enlargement of the thyreoid was a rarity in South Australia and probably in Western Australia. Cairns was the only place in Queensland from which a report had been obtained. Attention might therefore be confined to the south-eastern portion of Australia, including Tasmania. Thyreoid enlargement was seen in New South Wales in the coastal plains, especially that of the Hunter River Valley, in the valleys and on the slopes of the tableland to the east and close to the tableland to the west, all places with a considerable rainfall and many rainy days. This was also true of Victoria. He had no personal knowledge of Tasmania, but it appeared that similar conditions prevailed, the incidence corresponding to the heavier rainfall of west and south and steeper contours. Association with occupations such as dairy farming in goitrous areas was probably a rainfall and not an occupational phenomenon. This was in favour of the soil theory and the iodine or lack of iodine in the diet. After referring briefly to the theory of water carriage of infection, Dr. Sutton submitted some observations based on geological maps. The chief incidence appeared to be confined to palæozoic strata: permo-carboniferous, Devonian, silurian and marine tertiary deposits derived from these rocks. The explanation suggested concerning the association with rainfall was that low rainfall and few rainy days in the year produced soil conditions in which the capillary action of percolated rain was greater than the leaching action. No definite medium of infection, however, had been isolated and it was difficult on soil and diet alone to explain individual cases in the actual areas in one family after the other.

Dr. Sutton pointed out that the best test of a goitrous area was the incidence in boys. Enlargement of the thyreoid in boys was always abnormal, it might be physiological in girls. He held that more evidence was desirable as to the association between enlargement of the thyreoid and exophthalmic goitre. The latter often appeared to be unrelated to simple enlargement and to goitrous areas. Prevention on any considerable scale had not been tried properly in Australia. Some efforts were being made in Bairnsdale by the administration of iodine to school children. Iodized salt was already in existence in South Australia, but not in Victoria or Tasmania.

PROFESSOR A. M. DRENNAN (Dunedin) read a paper on the pathology of goitre. He said that in the present state of knowledge iodine was the most important initial factor in the pathological condition known as goitre. He referred to the work which had been done on the thyreoid in regard to iodine and the thyreoid hormone and said that it was safe to assume that the iodine in the thyreoid was a fair index of the hormone stored in it. Working with Hicks some five years previously he had found it impossible to get an idea of the distribution of iodine in the different parts of the gland. He drew attention to the variety of pathological changes found in examination of fully developed goitres. In examining the question of goitre it was thus imperative to examine *post mortem* thyreoids in which there was no question of the occurrence of goitre. In examining goitres in the laboratory he had found the following pathological changes: atrophy, colloid changes, hyperplastic colloid changes, hyperplasia, adenoma, degeneration, fibrosis, hæmorrhage. The findings had indicated a higher proportion of colloid tissue in the "simple" type than in the "toxic," while hyperplastic appearances increased progressively from the simple to the "exophthalmic" type. He and Hicks had found that the more extensive the hyperplastic change, the lower the iodine content per gramme of gland substance. Further in simple and toxic types the total iodine in the gland had frequently been large, though the amount per gramme was low. This had frequently been due to the large mass of gland tissue. Roberts and he had been able to make what might be called fractional analyses of the different parts of thyreoid glands. The results of several examinations of thyreoid tissue were then given in detail by Professor Drennan and he discussed the significance of the findings in each instance.

Professor Drennan then went on to say that he did not agree with Williamson and Pearse that the clinical condition of the patient should be ignored and only the histological appearances used for the grouping of goitres, except from a purely anatomical point of view. Nor could he see any particular advantage in the many new terms they employed in their pathological classification. He recognized two main phases, the rest, storing or colloid and the active, secretory or hyperplastic phase. He felt that one might merge into the other. Williamson and Pearse had dismissed the idea of iodine deficiency as a basal cause of thyreoid disturbance without having studied the iodine factor. Iodine deficiency might not be the only cause, there might be accessory factors, but Professor Drennan held that iodine deficiency was the basic cause of all forms of goitre. He presented a schema in which was shown the sequence of events graphically set out. If the thyreoid was exposed to an iodine deficiency, it had to respond in one of two main ways, if it was to maintain the necessary supply of hormone. It might uniformly increase the storage area to lay up a larger supply of colloid which was at a lower iodine concentration. To do this the alveoli increased in size by means of the cells increasing, if necessary, in number and filling the alveoli with colloid. The thyreoid might respond to the initial deficiency by the parts becoming hypertrophied and by their laying up larger colloid stores or by the parts

becoming "active secretory" and pouring out the hormone as it was made. In this way the various forms of nodular or adenomatous goître might arise. The second main mode of response to the iodine deficiency was for the whole gland to become active secretory, a diffuse "hyperplastic" type. In the scheme he outlined Professor Drennan put forward suggestions for treatment of the various forms of goître based on his conception of the pathology.

DR. R. R. STAWELL (Melbourne) read a paper on the medical treatment of goître. He adopted the classification of Plummer and discussed the subject under the headings: simple or diffuse colloid or endemic goître, adenoma in a simple goître, adenoma in a simple goître with hyperthyreoidism and exophthalmic goître. Referring to the work of Williamson and Pearse, he said that clinicians should not allow themselves to be confused by the introduction of new views on the morbid anatomy or by new terminology. Clinical classification based on morbid anatomy alone might be more misleading than helpful in clinical work. Simple goître might be accompanied on the one hand by symptoms of defective thyroxin output and on the other by nervous symptoms. If either of these two opposite conditions were found, the diagnosis and treatment rested on the findings of the basal metabolic rate. If the basal metabolic rate remained high in what appeared to be a simple goître, there was present a degree of active adenomatous tissue mixed up with the diffuse colloid goître. If the metabolic rate was within normal limits, iodine in some form might be given with hope of improvement. Dr. Stawell had been disappointed in iodine as a cure. If the basal metabolic rate was raised it was advisable to avoid the ordinary iodine preparations, as they might irritate or activate a smouldering adenoma. Desiccated thyreoid should then be given with the idea that it supplemented, but did not stimulate the action of the gland. If the basal metabolic rate was below normal, it was obviously imperative to give thyreoid gland extract. The dose must be determined by the basal metabolic rate. The medical treatment of a simple goître was full of complexity. Not only was iodine frequently ineffective, but if there was a commencing adenoma, it might be harmful. In regard to adenoma Dr. Stawell pointed out that there was no medical treatment. It was entirely a surgical problem. Of adenoma with hyperthyreoidism the same might be said.

Turning to exophthalmic goître Dr. Stawell said that clinicians were indebted to Plummer for his recognition that the essentially characteristic symptoms of exophthalmic goître were a combination of ocular signs, a special syndrome of nervous symptoms and the occurrence of crises during the natural course of the disease, when all the abnormal symptoms were exaggerated in intensity. In discussing the treatment of this variety of goître Dr. Stawell referred to several stages in his experience of treatment. In the first expectant treatment had been the rule and he had realized its ineffectiveness. The second stage in his experience was that associated with the surgical treatment as carried out by Dr. T. P. Dunhill. In speaking of focal infection Dr. Stawell said that in well marked cases the dysthyreoidism should first be lessened or lowered and that then extraneous burdens of ill-health that were surgically removable, could be considered. The third stage of Dr. Stawell's experience was that associated with the modern treatment. He spoke of Plummer's work in this field and referred to the "iodine remission" following on the use of Lugol's solution. The amount of iodine had to be carefully adapted to the needs of each patient. In the severe cases of the disease it put the patient into a better state to stand the operation of subtotal thyreoidectomy which was the essential plan of treatment in definitely developed and persisting degrees of exophthalmic goître. The rôle of the physician was to prepare the patient for the surgeon and to reinforce the effects of subtotal thyreoidectomy.

DR. CARRICK ROBERTSON (Auckland) read a paper on the surgical treatment of goître. He referred to Plummer's classification of enlargements of the thyreoid gland, but confined his remarks to colloid or simple goître, adenoma without hyperthyreoidism, adenoma with hyperthyreoidism and exophthalmic goître. Colloid or simple goître included endemic goître of which there was more than one form. This form of goître started as a true hypertrophy of the gland. If the enlargement was allowed to continue, the gland became more colloid in character and in a few years became the colloid nodular goître. After a still further lapse of years the goître became a toxic one. Adenomatous goître was somewhat different in type in that the adenomata had a definite capsule. They also were prone to become "toxic" and when they were cut the examination of sections revealed areas of hyperplasia surrounding the adenomata. It was possible that the operation of removing the adenoma cured the toxic condition by relieving the pressure on the gland lobules and lymphatic sinuses which carried away the thyreoid secretions. The chief action of the toxic agent in adenomatous goître was on the myocardium and Dr. Robertson referred to the difficulty frequently experienced by physicians in deciding when the fibrillation had come to such a pass that no good could result by removing the source of the poison. Besides general toxic symptoms adenomata might give rise to local pressure symptoms. When an operation was performed on an adenomatous goître, the whole thyreoid should be exposed and palpated in order that smaller adenomata in other parts of the gland should not be missed. In discussing exophthalmic goître Dr. Robertson referred to the work of Williamson and said that his views seemed to throw light on the treatment of this variety of goître. They justified the claims of the physician that early cases were properly treated by medical means. In support of Williamson's theory it was known that Graves's disease in young girls with a large, soft gland was not so satisfactory from a surgical point of view as the condition of those patients with a longer history and a hard gland. In so-called secondary Graves's disease they were on stronger surgical ground. Either the Graves's disease had developed in an already diseased thyreoid gland or a condition of primary Graves's disease had become fibrotic. The gland held accumulations of secretion and colloid in its meshes which could not get out by normal channels. Dr. Robertson concluded by remarks on the technique of thyreoidectomy.

DR. C. C. ANDERSON (Dunedin) read a paper on radiotherapeusis of exophthalmic goître. By radiotherapy the abnormal cells of the thyreoid were so influenced that they returned to normal function, it might be that the abnormal cells were replaced by normally secreting cells. Radiotherapy could be used, no matter how bad the condition of the patient might be. There was a certain type of patient who did not always react favourably to radiation treatment. This was the patient with a diffuse goître of the colloid type. These patients probably gave better results if operation followed one or two applications of the rays. One disadvantage of radiation therapy was the time factor. Once the early stages of treatment were passed, the capabilities of a patient could be tested and a gradual return to work made. This avoided the distressing postoperative neurasthenia so often seen. In Dunedin until quite recently they had used ten milliampères of current with three millimetres aluminium filtration, an alternate spark gap of nineteen centimetres and a focal skin distance of thirty centimetres. Each side of the neck was treated for four to five minutes and the ports of entry were so arranged that the thymus also received radiation. Of his private patients out of twelve with exophthalmic goître four were well and four were so much improved that they were able to carry out their duties with a fair degree of success. Two had not improved owing to irreguiar attendance for treatment and two had died. Of four patients with toxic goître three were well and one was improved. Latterly a deep therapy machine had been installed and they were using a current of two hundred kilovolts, twenty milliampères at fifty centimetres focal skin distance with half a millimetre of copper and one millimetre of aluminium as a filter and a four minutes' exposure. Radium had not given such satisfactory results as X ray treatment and was liable to cause telangiectases.

DR. BAKER McLAGLAN (School Medical Service, New Zealand) opened the discussion with a few remarks on the mode of attack by her department on the goître problem. In schools there were three methods of attacking the question: (i.) by ascertaining the incidence, (ii.) by the result of the exhibition of iodine (iii.) by the correlation

of goitre with septic foci and by the finding and treatment of septic foci. She emphasized the fact that Dr. Hercus's remarks might lead them to suspect that the disease affected children chiefly, but this was a purely statistical point. She quoted figures to prove that the incidence of goitre in limestone country was lower than in surrounding areas, for example in Te Kuiti (limestone) there was a low incidence; in Waikato (pumice and gravel) there was a high incidence. She also referred to the hereditary factor as being one that was important, but likely to be overlooked. A very large percentage of babies of goitrous mothers had goitre, but a goitrous baby from a mother free of goitre was unknown. More work was needed to discover how long hereditary goitre persisted. Dr. Baker McLaglan then showed graphs and charts illustrating work on the goitre problem and the favourable results obtained by giving small doses of iodine.

DR. E. CHAMPION (Ballarat) asked for a more detailed description of Dr. Stawell's method of administering iodine.

DR. J. GUTHRIE (Christchurch) agreed with the opinion expressed concerning the importance of the public health aspect of the goitre problem. He advocated an education of the people as to the value of diet as a source of iodine. He recommended further consideration of the sources from which iodine was derived in the food of the people. The incidence of goitre depended on the absence or presence of iodine in the food, food consumed being the source of body iodine. Sea food was especially rich in iodine, but in New Zealand this is scarce and of high price and inland people did not obtain fish readily. He suggested that the Government should help in the distribution of sea food especially in inland districts. Goitre was rare among Maoris who were great fish-eaters.

DR. A. C. B. BIGGS (Balclutha) inquired if McCarrison's work was not now accredited. He thought it should still be considered. He would like to ask Dr. Hercus if the conclusions from such good work were not to stand.

DR. T. L. PAGET (Stratford) stated that goitre was prevalent in Taranaki and that the province was not goitre-free. He had come to this conclusion after twenty-seven years' practice in that province.

DR. D. L. SINCLAIR (Hawera) disagreed with Dr. Paget and agreed with Dr. Hercus that Taranaki was comparatively goitre-free.

DR. MARY DE GARIS (Geelong) held that there was a combination of cause in the production of goitre, not only an iodine deprivation, but also a common toxæmia. She inquired whether it was known when goitre had become a national problem in New Zealand.

In the treatment of goitre Dr. De Garis had found that the exhibition of *syrupus acidi hydrochlorici* and "Iodex" ointment gave great benefit in early cases even if the focal sepsis in situations such as the teeth, antrum, tonsils and so forth were not removed. It was, however, more useful if sepsis were dealt with at the same time.

DR. D. GIFFORD CROLL (Brisbane) asked Dr. Hercus to elaborate the treatment and prophylaxis he recommended as preferable.

DR. L. E. BARNETT (President of the Congress, Dunedin) said that goitre was of intense importance in New Zealand. There was a possibility of doing something definite and helpful along public health lines. A small committee should be formed to draw up a remit to submit to general meeting in connexion with goitre prevention.

DR. HARVEY SUTTON in reply agreed that there were other factors in goitre causation besides the presence or absence of iodine in the soil. He agreed that more information was needed about the translation from simple to toxic goitre. The subject would be further dealt with in another meeting. He had experienced difficulty in collecting information on the point. He had not yet seen the simple goitre display toxic symptoms requiring sick leave.

He emphasized the fact that goitre prevention must be along physiological lines. The diet factor must certainly be considered. In the administration of iodine more work by age groups was needed and would produce interesting results. He thought that iodized salt was certainly the most fertile of possibilities in prophylaxis.

PROFESSOR HERCUS replying to Dr. Stawell, who had had uniformly unsuccessful results with the iodine treatment of simple goitre, said that this was not the New Zealand experience. He referred to Dr. Baker McLaglan's results. Salt iodized according to exact calculation of physiological requirements was a good preventive measure if used for all culinary and table purposes. In the cooking of green vegetables about two-thirds of the iodine were extracted by the water used, hence the water from vegetables should not be discarded, but used. The average daily intake of salt from all sources was about five grammes; this daily intake if of salt iodized to contain one part of potassium iodide in 250,000 parts would be an easy and biological way of supplying the iodine deficiency. This small amount would suffice for prophylaxis. It was wise to think of iodine in terms of milligrammes and not of grains. The daily iodine requirement of the healthy thyreoid gland was about forty milligrammes. If one grain was prescribed it was far too much iodine and the excess was promptly excreted in the urine. Any further increase in dose was similarly excreted.

Dr. Harvey Sutton had suggested that age group treatments would be a useful study. Already in Dunedin age group treatments had been carried out, salt iodized one part in 250,000 being used. By working among girls from two to three years up to 'Varsity women notable results had been obtained.

One speaker had referred to secondary causation. The dietetic was an important secondary factor, so also was focal sepsis. For example, after removal of septic foci, goitre had been known to decrease. But the primary factor in ætiology was iodine deficiency. McCarrison had recently modified his former views.

Dr. Hercus pointed out that Stratford, New Zealand, was on a gravelly plain with less humus and therefore less iodine and more goitre than the rest of Taranaki. In local observations the movement factor of the population was important and had to be kept in mind. In referring to sea fish as a source of iodine in food, he drew attention to the fact that edible seaweeds were preferable, while the white-fleshed fish, such as groper, so commonly used, was of low iodine content. The shellfish type were rich in iodine, for example oysters. Sea fish should be used more, but there were other elements in food rich in iodine, such as eggs, milk, leafy vegetables.

The universal iodizing of salt had been objected to on the grounds that it was an unjustifiable interference with the people's rights; but the method had been evolved from the careful biological study of the goitre problem and no dangers were incurred. If this method were adopted, the State should take strong action against the manifold goitre remedies. The Swiss Goitre Commission had long ago realized that in Switzerland. Professor Hercus hoped that a committee would be set up to go into the matter of the prophylaxis of goitre.

DR. BARNETT then proposed a committee to form a remit suggesting legislation in regard to goitre prevention. The meeting agreed to a committee of five: Dr. C. E. Hercus (convener), Dr. Harvey Sutton, Dr. S. S. Argyle, Dr. M. H. Watt, Dr. R. R. Stawell.

SECTION VI.—OPHTHALMOLOGY.

Causes of Concomitant Strabismus.

DR. A. M. MORGAN (Adelaide), the President of the Section, discussed in his address the causes of concomitant strabismus. He examined the theories of Donder and of Worth and produced evidence from his own observations and from the published records of other ophthalmologists to disprove both. In the next place he turned his attention to errors of accommodation as possible causes of squint. Since more than eight diopters of hypermetropia in each eye would be required to produce a convergent squint of 25° and since squints were much more common than so high a degree of hypermetropia in both eyes, he concluded that this error played a very minor part in the causation. He also found ample data to support his conception that myopia did not produce divergent strabismus, although its presence contributed to the production of exophoria. After marshalling much evidence concerning the relationship of

heterophoria to concomitant strabismus, he found that that the majority of children were born esophoric, that esophoria diminished up to the age of eleven and that the majority of persons after that age were either orthophoric or exophoric. He referred to work done by Merkel which indicated that as the globe became larger, the position of rest tended to be in the direction of the axis of the orbit. This, in his opinion, explained why convergent squints often became straight as the children grew older. He denied that the effect of tenotomy increased with time. In the last place he examined the relationship between impaired fusion sense and squint. Loss of this sense or weakness of it was shown to be the most important cause of concomitant strabismus. He found, however, that by itself it did not act. It was accompanied by either heterophoria or by hypermetropia. The determining fact in the development of a squint was the relationship between the desire for binocular vision and the effort needed to align the eyes correctly. If the desire for fusion were greater than the effort, there would be no squint. If the effort required to produce alignment of the eyes were greater than the desire to obtain binocular vision, a squint resulted.

SIR JAMES BARRETT (Melbourne) congratulated the speaker on the amount of work he had put into his paper. He quoted the work of Lang and himself in disproving the old idea that amblyopia was the cause of squint. He had examined numbers of patients and he found that amblyopia had nothing to do with it. While there seemed to be many anomalous cases his experience was that the majority were due to hypermetropia and mentioned the condition in which squint disappeared with suitable glasses and immediately reappeared when glasses were discarded. He had seen convergent non-paralytic squint following the use of forceps. He agreed with the speaker that squints occasionally disappeared without any treatment and said that operations on that account used to be postponed till the age of fifteen or sixteen.

DR. F. ANTILL POCKLEY (Sydney) agreed with the previous speaker that hypermeteropia was most often associated with convergent squint and mentioned the fact that if a mydriatic was used in the fixing eye, the other eye squinted.

DR. G. W. HARTY (Wellington) mentioned reflex causes which appeared to cause squint, for example thread worms. He had treated patients in whom squint disappeared after thread worms had been removed. He believed in having the faulty eye trained daily for short periods at regular intervals with the use of letters, pictures and the like and thought it was the first duty to encourage the retention of acuity by training as well as glasses. He thought that this was important whether the person got binocular vision or not.

DR. GEORGE FENWICK (Auckland) congratulated Dr. Morgan on his work and pointed out that early operation by placing the muscles in the most advantageous anatomical position should result in the preservation of binocular vision in a satisfactory percentage of patients. He asked whether this had been the President's experience.

DR. H. F. SHORNEY (Adelaide) asked Dr. Morgan to explain the mechanism of alternating squint according to his theory.

DR. F. M. MORGAN in reply said that he did not operate before the age of fifteen and in reply to Dr. Harty with regard to the temporary causation of squint by thread worms said that if a child was run down or debilitated he squinted.

In answer to a question of Sir James Barrett he said that glasses corrected only a certain amount of the squint.

The Ocular Signs of Exophthalmic Goître.

DR. J. BROOK LEWIS (Adelaide) contributed a paper on the ocular signs of exophthalmic goître which was read in his absence by Dr. Marchant. He pointed out that exophthalmos was absent in about 20% of all patients with Graves's disease and that it was often very slight in the early stages. The degree varied considerably. At times it was unilateral. It frequently persisted after the disappearance of all the other signs. He discussed the various views concerning the ætiology of the exophthalmos and in particular referred to the factors set out by Bram. In the next place he directed his attention to the ocular signs dependent on alterations in the relations of the several muscles of the eyes. The first was von Graefe's signs. A modification of this sign had been described by S. S. Cohen and called by him the "hitch sign." The sign was not invariably present in Graves's disease; it had been noted in healthy individuals. He spoke of it as the classical sign of exophthalmic goître. Stellwag's sign was also a frequent accompaniment of the disease. At times the opposite condition prevailed; the eyes winked too frequently. Moebius's sign was also frequently present. Insufficiency of convergence might cause asthenopia, but not diplopia. Dalrymple's sign was described as being independent of exophthalmos. During sleep the lids were closed, save when exophthalmos was present. Gifford's sign was often encountered in the early stages. Suker's sign was held to be a manifestation of dissociation in the functions of the sympathetic and the extraocular motor nerves of the eye. Kocher's sign comprised the immobility of the eyeball when the upper lid moved upwards, while an object moving in a vertical direction was being followed. At times paresis of the ocular muscles was noted in Graves's disease. Tremor of the upper eyelids was of a rapid, rhythmical and fine character. Nystagmus had been recorded in exophthalmic goître. Reversed Argyll-Robertson pupil was said to occur at times. In many patients mydriasis followed instillation of adrenalin. The signs due to alteration in the metabolism of the eye were cataract, optic atrophy, optic neuritis, amblyopia, falling out of the eyebrows and Jellinck-Teillais's sign of brownish discoloration of the eyelids. The majority of these signs were complications rather than manifestations of the disease itself. The next group comprising a bruit over the eyeball, œdema of the lids and obliteration of the superior palpebral fold, were dependent on vascular disturbances. Among the anomalies of lachrymation epiphora and dryness of the cornea were mentioned. Conjunctivitis, keratitis and panophthalmitis were the result of exposure of the cornea.

DR. A. M. MORGAN (Adelaide) said that patients with exophthalmos very rarely came under his notice. The patients sought the aid of general surgeons.

SIR JAMES BARRETT (Melbourne) said that he himself had taken thyreoid extract to reduce his weight. He had brought it down 12·6 kilograms (two stone), but had developed exophthalmos.

DR. A. J. HALL (Dunedin) quoted the case of a woman who had heard of the sudden death of a child from scarlet fever and had developed double exophthalmos. He did so in view of the fact that Foster Moore who had done a great deal of work in this connexion, did not mention any cases of sudden onset.

Operative Treatment of Lachrymal Obstruction.

DR. E. L. MARCHANT (Wellington) read a short paper on the operative treatment of lachrymal obstruction. He pointed out that West's intranasal operation was unsatisfactory, since a probe might pass readily and yet failure might occur as a result of the removal of too little tissue. He had used an operation described by Mosher-Toti. A pack of "Novocain" and cocaine in the nasal cavity provided satisfactory anæsthesia. The incision started opposite the crease of the upper lid and extended in a line running parallel to the lachrymal groove six millimetres from the inner canthus. It terminated at a point three millimetres below the level of the lower orbital margin. The incision reached the periosteum. The sac was identified and turned outwards until the nasal duct was seen. The floor of the groove was opened and the opening was enlarged by cutting away portions of the posterior margin of the ascending process of the maxilla and the remainder of the lachrymal bone. Dr. Marchant called attention to the necessity of removing sufficient of the posterior margin of the ascending process. All mucous membrane tags and bone spicules should be removed. The after treatment consisted in syringing and dealing with excessive granulations from the cut bony surface. Dr. Marchant also dealt with Hanger's operation, which appeared to be satisfactory, provided that

a probe could be passed through the duct. The operation described by Poyales had been designed to provide good drainage especially when there was a stricture of the canaliculus.

DR. A. M. MORGAN (Adelaide) said that he favoured operation for removal of the lachrymal sac in cases of nasal obstruction and was quite satisfied with the results he got from this operation.

DR. G. W. HARTY (Wellington) said that he had had good results from the operation and that recurrence took place when it was difficult to get good drainage. He agreed with the speaker that a large opening was necessary.

DR. L. S. TALBOT (Timaru) said he had operated on several of these patients but had found that after some time there was a tendency to cicatritial contraction. He would ask if it was sufficient to provide drainage only; if so, it was almost like going back to the cannular stage. The physiology of removing tears from the eye was more than the mere passage of tears.

DR. TALBOT (Auckland) thought that the removal of the lachrymal sac was sufficient in his experience. He had done several intranasal operations, but had found difficulty afterwards in keeping the passage clear as fluid could regurgitate just as easily into the sac as into the nasal cavity.

DR. H. F. SHORNEY (Adelaide) thought that the operation to be performed in these cases should be the one which gave the most constant and favourable results. His experience had been that the treatment of the sac along with the palpebral part of the lachrymal gland gave most favourable results in most cases. If the epiphora continued, he removed the orbital portion of the lachrymal gland.

DR. A. J. HALL (Dunedin) thought that before operating the sac itself should be attended to. He said that in these conditions the musculature of the sac was impaired owing to the swelling and unhealthy condition of the sac. He thought that no form of treatment was successful unless the sac was treated and restored to a satisfactory state.

DR. F. ANTILL POCKLEY (Sydney) said that in his experience removal of the sac was quite satisfactory.

DR. GEORGE FENWICK (Auckland) thought that the members were unduly pessimistic in their attitude towards operations of the West type; in his experience the immediate result was the final result in the great majority of patients. Hæmorrhage was the difficulty during operation. Infiltration of the nasal wall with "Novocain" and "Adrenalin" might eliminate this. Packing he found was unreliable.

SECTION X.—NAVAL AND MILITARY MEDICINE AND SURGERY.

Medical Services in the Field.

COLONEL F. A. MAGUIRE, D.S.O., Deputy Director of Medical Services of the Second Military District, Australian Military Forces, submitted a paper on the medical services in the field, with especial reference to the Battle of Messines. Basing his argument on the field service regulation requiring rapid evacuation of the sick and wounded, Colonel Maguire asserted that thorough organization with sound discipline, a sense of loyalty and cooperation between the medical units was essential to rapid evacuation. The provision of warmth was very important for the safe removal of the wounded. The transport facilities should include light railways or tramways and an ample supply of ambulance cars, lorries and transport waggons. At each stage of evacuation there should be a minimum of delay, while supervision would be continued throughout the lines of evacuation. After recounting the means employed to supply warmth to the wounded soldier, Colonel Maguire summarized the essentials for the medical services in the field as good staff work, ample supplies and thorough training of the personnel.

Turning to the medical services in the Battle of Messines he emphasized that the battle was a "set piece," in that the plans had been laid for many months before. There was a definite, limited objective to capture the Messines-Wytchaeta Ridge and to advance the line a distance of about three and a half kilometres in the centre in order to straighten the deep salient in the line. Two corps main dressing stations were established to each corps. The assistant directors of medical services were responsible for the removal of the wounded from the line to the main dressing stations and collecting posts. The deputy directors of medical services of corps were responsible for removing the wounded from the main dressing stations to the casualty clearing stations and for the further transport to the lines of communications the Director of Medical Services of the Army was in charge. The second Anzac Corps had five advanced dressing stations. The main stations had been prepared in advance. The field ambulances were also well organized. There were eleven casualty clearing stations in the army area. The battle began at ten minutes past three in the morning on June 7, 1917. Nineteen large mines were exploded simultaneously under the enemy lines and the troops attacked. By half past six five hundred men had passed through the Corps Main Dressing Station at Pont d'Achelles and one hundred and sixty-eight had passed through the Main Dressing Station at Kandahar Farm. The first ambulance train left Bailleul at half past seven. The distance between the corps main dressing stations and the casualty clearing stations was so short that there was a tendency for the overhandling of wounds. In three days the casualties numbered 17,559. The casualty clearing station in Bailleul became congested on June 7. This was remedied by diverting the wounded to Pont d'Achelles. The staff work was excellent and the discipline in the units was of a high order. Colonel Maguire pointed out that the only hitch was caused by the bad approaches to the casualty clearing station at Bailleul. He urged that attention should be given to traffic facilities in similar circumstances.

GENERAL SIR DONALD J. MCGAVIN (New Zealand) expressed his interest in the paper submitted as at the operations under review he was Assistant Director of Medical Service of the New Zealand Division. He agreed that corps main dressing stations had been unnecessary at Messines, as advanced dressing stations could have done all that was necessary. The position of the former had been vulnerable and extra handling had been necessary. Their institution would have been advisable (i.) if the carrying to the casualty clearing stations had been too long or (ii.) if long distance shelling had been too heavy. The only delay experienced had been at Westhoek, where cars had waited as long to be unloaded as it would have taken to have gone to Bailleul and back.

He considered that the advantage of previous knowledge and of set objective had made for the excellent arrangements which eventuated. He dealt with the question of the order that ambulance cars should not go to the front line. He estimated that the exposure of wounded to shell fire was much less with ambulances than with hand carrying. The proportion was 1 : 32. He submitted that it was more important to keep roads in good order than to maintain light railways which were easily put out of commission.

In the operations under review there was not so much shelling of the Neuve Église-Wuhinghen Road as had been anticipated.

Bearers, drivers and others had been supplied with body shields which however had often been discarded. Undoubtedly these shields had saved many lives. One peculiar fact noticed regarding them was that the khaki covering often prevented wounds after the steel plate had been penetrated.

LIEUTENANT-COLONEL J. H. HARDIE NEIL (Auckland) emphasized the perfection of the medical organization at Messines. In his opinion the only thing lacking had been a lack of facilities for treating abdominal wounds and mentioned that he had suggested their institution after the first battle of the Somme. This suggestion had been adopted later. The only thing against their establishment was their liability to shell fire, but he did not think that this was of much moment, because the location of such stations was usually carefully selected.

He referred to the improved treatment of fractured thighs with Thomas's splints and the reduction of the mortality to 15%.

With reference to stretcher bearers whom he considered should be regarded as specialists, he mentioned that adequate rest for these men was greatly to be desired.

COLONEL J. S. PURDY (Sydney) stated that it was interesting to note that as a result of experience at Messines and Passchendale, when the Canadians took over the offensive at the latter place, Colonel Ross, D.D.M.S., Canadian Army Medical Corps, eliminated the corps main dressing station and evacuated direct from the advanced dressing station at Ypres to the casualty clearing station at Remy Siding.

An excellent arrangement at Messines was the pooling of the stretcher bearers of the three field ambulances, one having an officer commanding of the forward area, another officer commanding of transport and the other at the main dressing station. To lessen fatigue and prevent stretcher bearers from being continuously at work, they were divided so that from zero for twelve hours half were at rest: thus men were not continually at work for six days without reasonable spells. At Charing Cross Advanced Dressing Station a number of gassed soldiers caused difficulty. These casualties were due to insufficient training in the use of gas masks. This was later remedied by the institution of gas schools for the proper instruction of troops.

One feature of the battle of Messines which was not, however, specially the concern of the medical service, was the delay in the burial of the dead. This was due to the late arrival of the officer concerned.

LIEUTENANT-COLONEL A. D. CARBERY (Wellington) spoke of the advantages to be gained by the establishment of corps main dressing stations as a relay between the advanced dressing stations and the casualty clearing stations. These advantages he considered were as follows:

(i.) The regulation of the flow of wounded to the casualty clearing stations where the work done was limited by the capacity of the operating teams. Nearly one-third of the wounded required operation and the sorting of the various types of casualties should be carried out at main dressing stations.

(ii.) The requirements of urgent surgery, such as the arrest of hæmorrhage and emergency amputations, were best attended to at main dressing stations, while restorative measures for shock, such as blood transfusion, the application of warmth and rest, could be applied in the same place.

(iii.) The administration of antitetanic serum in his opinion was best carried out at main dressing stations; the necessary clerical recording work, the preparation of "A.F. 36" and the notification to the assistant directors of medical services of the nominal roll and disposal of the wounded of the respective divisions were also essential functions of the corps main dressing stations.

MAJOR K. GORDON (Te Aroha) mentioned that he had been a regimental medical officer at Messines and put in a plea that regimental stretcher bearers should also be regarded as specialists and be accorded special treatment.

MAJOR F. L. BIGNELL, D.S.O. (Lismore) stated that from the point of view of the regimental medical officer supplies, especially dressings, were not adequate and advocated the sterilization of emergency dressings by regimental medical officers.

COLONEL R. B. SMYTHE, D.S.O., Adjutant-General, New Zealand Staff Corps, spoke as a combatant officer and pointed out that, although Messines had a set and limited objective, medical organization in the future must be directed generally to providing for operations without such set objective. He commented on General McGavin's remarks regarding the time of evacuation of wounded and their exposure to shell fire. He stated that he thought that when an area was being covered by enemy fire, but individual targets were not aimed at, it was certainly advantageous to get the wounded away in cars as suggested, but that where fire was being directed at individual targets, it would probably be better to employ stretcher bearers, because the ambulance car made a much more conspicuous target.

MAJOR GENERAL G. W. BARBER, D.G.M.S., Commonwealth Military Forces, who presented Colonel Maguire's paper, stated that the experience gained at Messines was invaluable to him as later he had been responsible for the arrangements at the battle of Amiens and of the Hindenburg Line and had based his orders on the knowledge gained. In traversing the comments of previous speakers he mentioned: (i.) That light ambulance cars later ran as far as regimental aid posts. His own opinion was that light railways were extremely vulnerable and alternative methods had to be provided, (ii.) forward operating units were later instituted by creating resuscitation teams for each division. He also dealt with the criticisms of main dressing stations and agreed that the abolition was justified in certain circumstances.

FRIDAY AFTERNOON, FEBRUARY 4, 1927.

COMBINED MEETING.—SECTIONS I. AND IV.

Metamorphosis from Simple to Toxic Goitre.

DR. S. V. SEWELL (Melbourne) prefaced his remarks on the transition of simple toxic goitre by reminding his audience of the fact that the amount of blood that passed through the thyreoid gland was four times the amount that passed through the kidneys. It was inconceivable that this large blood supply was needed for the production of the minute quantities of thyroxin normally present. It had been suggested that the gland acted as a detoxicating machine for the blood. Under conditions such as puberty changes, menstruation, pregnancy and the climacteric there was an increased vascularity. When the gland was unhealthy, the increased vascularity produced might be insufficient and hyperplasia or over-formation of colloid might result. This hyperplasia might go on to adenomatosis and then to the formation of adenomata. In late life atrophic changes set in and any urgent call for excess thyroxin might incite the newly formed tissue to produce thyroxin at high pressure. The result would be hyperthyreoidism. Dr. Sewell illustrated the association between psychic stimulation and the transition of simple adenoma to adenoma with hyperthyreoidism by relating the histories of two persons with symptomless goitres who had experienced a serious railway accident.

In connexion with the iodine insufficiency of exophthalmic goitre he discussed Plummer's hypothesis of dysthyreoidism with incompletely iodized thyroxin. He regarded this as an admirable working hypothesis. He also referred to Williamson's suggestion that the thyreoid was a lymph sinusoid which carried the secretion of the gland through the lymphatic channels to the thymus where thyroxin was stored. In acute conditions of hyperplasia and hypertrophy of the gland cells might block the sinusoid, with the result that thyroxin was forced into the blood stream. The thyroxin would be immature and toxic. If proved to be correct, this theory would explain the acute crises of Graves's disease.

DR. A. H. TEBBUTT (Sydney) spoke of hyperthyreoidism and myxœdema, in a paper by himself, Dr. V. R. Woodhill and Dr. F. S. Hansman. They claimed that if hypothyreoidism included all conditions due to defective thyreoid function, myxœdema would be the most severe form of hypothyreoidism. This had been proved by estimations of the basal metabolic rate. Until 1896 very little information concerning the histo-pathology of the thyreoid gland in myxœdema had been collected. Riedel had described an iron-hard struma. Up to 1926 about forty-seven cases of Riedel's struma had been reported. Few observers had estimated the basal metabolic rate. Smith and Clute had pointed out that myxœdema developed after thyreoidectomy for Riedel's struma. In three out of Dr. Tebbutt's four patients the basal metabolic rate was —8%, —21% and —15% respectively. The authors discussed a communication by Simmonds who discovered chronic thyreoiditis and fibrous atrophy in twenty thyreoid glands encountered in the *post mortem* room. The glands were of small size with almost complete disappearance of normal gland tissue in the more advanced cases. The glands were divided into five groups, but it was apparent that the differences were quantitative and not qualitative. Only two of the twenty persons had had myxœdema in a recognizable form. The authors suggested that various factors deter-

mined whether the changes in the gland were associated with the complex known as Riedel's struma or its milder manifestations or whether the condition remained unrecognized. These factors included the condition of the gland at the onset, the possible occurrence of hyperplasia as an initial lesion and the intensity of the round cell infiltration. They displayed several photomicrographs to illustrate mild degrees of fibrosis of the thyreoid gland associated with atrophy.

Dr. F. T. Bowerbank (Wellington) discussed the clinical importance of the basal metabolic rate in goître. This subject had been neglected in New Zealand. The incidence and mortality of goître in New Zealand was high and was not decreasing. In 1916 there had been forty deaths from diseases of the thyreoid gland. In 1925 the total number of deaths from the same cause was seventy-four. In 1916 the number of treatments given in the public hospitals in New Zealand to patients for diseases of the thyreoid gland was one hundred and eighty. In 1925 the number had increased to five hundred and three. Dr. Bowerbank maintained that these figures proved that the diagnosis and treatment could not be carried out satisfactorily by clinical observation alone. The estimation of the basal metabolic rate was of great use in diagnosis. The differential diagnosis of hyperthyreoidism was often very difficult. Neurasthenia frequently simulated it. The condition spoken of as endocrine imbalance might be mistaken for hyperthyreoidism. Another condition that might be wrongly diagnosed as hyperthyreoidism was effort syndrome. Diabetes was not seldom confused with this disease. The speaker illustrated these points in the differential diagnosis by quoting cases in which the doubt was removed by the estimation of the basal metabolic rate. In the second place the metabolic rate revealed the progress of the disease. Although the pulse rate was usually the most valuable sign in hyperthyreoidism, it was not always reliable, especially when the myocardium was permanently affected. Thirdly the estimation indicated the best time for operative treatment and the amount of gland that should be removed. Frazier and Adler had established the formula that when the basal metabolic rate was increased by 40% a sub-total thyreoidectomy was indicated; when the increase was between 40% and 70% bilateral and unilateral ligature of the superior thyreoid artery should be performed. When the increase was over 70% no operative treatment should be undertaken. By following this guide, disaster might be avoided. Dr. Bowerbank devoted a few words to the best methods of estimating the basal metabolic rate in hospitals other than very large ones. He employed the closed method. The patient inhaled oxygen from a spirometer; the expired air was passed through soda lime which absorbed the carbon dioxide. He found this method accurate and easy to work. It was essential that the patient should be at rest and that the estimation should be carried out under basal conditions.

Dr. W. Summons (Melbourne) gave an account of an investigation into the incidence of goître in Gippsland. He stated that as a result of four "casualties" the work had not been completed and that his report was merely a preliminary one. Goître has been endemic since Gippsland had been populated by Europeans. Bairnsdale and Sale were the two chief towns. Both were close to the lakes which communicated with the open ocean. The classification of the Swiss Goître Commission was used. In Bairnsdale there were three schools with an aggregate of 305 boys and 313 girls. The percentage of goître among the boys at the three schools was 33·6, 27·6 and 19·8 respectively; among the girls it was 35·8, 47·3 and 32·0 respectively. Among the boys the thyreoid gland was hardly felt (Class I.) in seventy out of ninety-two; the goître was classed as II. in nine and as III. in thirteen. There were no Class IV. goîtres. There were seventy-six girls with Class I., fourteen with Class II., twenty-three with Class III. and six with Class IV. goîtres. At Sale among eighty-six boys between the ages of five and eight, thirty-eight had goîtres of Class I. and six had goîtres of Class II. Of one hundred and eleven boys between the ages of eight and fourteen fifty-five had goîtres of Class I. and seven had goîtres of Class II. Of thirty-four girls between five and eight years, ten had goîtres of Class I., but none had goîtres of Class II.; of one hundred and four girls between the ages of eight and fourteen fifty-one had goîtres of Class I. and sixteen had goîtres of Class II. Traralgon and Moe were towns in heavily timbered districts with a high rainfall. At the former there were twenty-nine goîtrous boys out of a total of one hundred and ninety-five and thirty-seven goîtrous girls out of a total of one hundred and seventy-three. At the latter there were six goîtrous boys out of a total of seventy-one and two goîtrous girls out of a total of sixty-nine. Among two thousand girls between the ages of nine and fourteen in Bendigo, Ararat, Ballarat, Warrnambool and Melbourne, about 0·5% were found to be goîtrous. Dr. Summons had ascertained that there was not associated undue prevalence of toxic goître in Gippsland. The analyses of the water and food in regard to their iodine content had not been completed.

Dr. F. V. Bevan Brown (Christchurch) said that he believed the active principle to be thyroxin and that the iodine portion of this substance was the active portion. The value of the thyreoid extract depended on its iodine content. The iodine molecule acted as an oxidizing agent in the body accelerating all the functions of the body. It maintained metabolism at a certain definite level. There was plenty of evidence that thyroxin exerted an antitoxic function. It did so by the virtue of its powers of oxidation. It also stimulated the defences of the body, the production of leucocytes and plasma and tissue antibodies. It also had a direct action on bacteria or their toxins. In alimentary toxæmia the presence in the bowel of excess of putrefactive material from bacterial action on protein food used up the iodine in the body. The supply of iodine in the body was thus reduced. In the case of infected tonsils and septic teeth the iodine was reduced in a similar manner. The demand for iodine in the body varied daily, hourly and according to the district, season and so forth. It did not follow, however, that if a person lived in a goîtrous district, he would acquire a goître. Extra demand was a great factor, but the toxic factor was also most important. They accepted the theory of iodine deficiency unreservedly, but there were other factors. Extra demand for thyreoid secretion, for example, by toxic infection in adults and by physiological demand in adolescence must be borne in mind by clinicians. He referred to a group of people between the ages of fifty and sixty who having led an active life, developed neurasthenia. Many of these were subthyreoidics and must be distinguished from the ordinary neurasthenic. These people, the subthyreoidics, often benefited by doses of thyreoid extract.

Professor A. M. Drennan (Dunedin) said that the basic cause of goître was the lack of iodine, although he admitted that there were other but subsidiary factors. When the gland was exposed to a lack of iodine, it responded; hypertrophy of overwork occurred. The gland reacted in one of two ways: (i.) storage, (ii.) hyperplasia or secretion. Enlargement then took place. If iodine was given, there was mass effect and toxic goître might result. Some parts might respond more than others, especially in the adenomatous type, with compensatory hypertrophy. The adenoma might assume one of two changes: (i.) storage of colloid, (ii.) hyperplasia or secretion. Fœtal adenoma was characterized by storage of colloid.

Goîtres became clinical when there was too much secreting tissue for the size of the individual. Iodine given might result in an adenomatous toxic goître. Surgery would have to step in to remove the "mass effect." This type of goître frequently occurred in women from thirty to forty years of age. The goître had probably been there since childhood; the demand lessened at a later age period and therefore the gland became overcompensated.

Degeneration and atrophy or other pathological changes might take place in hyperplastic or colloid nodules; hypothyreoidism and myxœdema might be an end result.

Another type of basic response might be diffuse hyperplasia. The gland poured out too much hormone and therefore it had no storage reserve. This type had been found *post mortem* in subjects of lymphatism with no thyreoid symptoms at all. If hyperplasia continued and there was no storage, the manufacturing area was in-

creased and primary exophthalmic goître would result. One end result of this might be that the tissues would become exhausted and death would occur. On the other hand myxœdema might occur. He said that Dr. Bowerbank had shown how the basic metabolic rate fell after the administration of iodine. The gland formed a storage head and therefore a hyperplastic gland must be removed before the basic metabolic rate would fall.

DR. F. FITCHETT (Dunedin) said that he would classify goître into (i.) endemic, (a) diffuse colloid, (*b*) adenomatous (toxic and non-toxic); (ii.) exophthalmic. He agreed that iodine deficiency was the essential cause of goître. Thyreoid enlargement occurred with iodine deficiency and he would attempt to give the reason. One function of the thyreoid gland was to maintain in the body fourteen milligrammes of thyroxin. To do this 0·33 milligramme must be excreted daily. The stimulus to the gland was the fall in thyroxin content in the body. When iodine deficiency occurred, there was a greater fall in thyroxin content in the body. The stimulus to the gland was intensified and this caused diffuse hyperplasia. Colloid was stored in excess and simple diffuse colloid goître resulted. Goître was the result of iodine deficiency acting on a gland whose efficiency was already impaired, for example, as by infective fevers or diseases of childhood.

This simple colloid goître in its pure form did not concern practitioners to any considerable extent. It rarely became toxic and usually disappeared spontaneously about the age of twenty-five. In some cases the gland might contain adenomatous tissue, as Dr. Stawell had pointed out and in these cases treatment with iodine, such as potassium iodide, gave no response, but there might be response to thyreoid substance.

There might be further changes, the formation of new acini which might give rise to distinct tumours or diffuse growth. Their behaviour was interesting. As a rule, as Dr. Sewell had mentioned, these adenomatous tumours did not function by producing thyroxin. Later when degenerative processes had set in, thyroxin was formed and under provocation the gland supplied too much thyroxin and toxic symptoms occurred.

It might be assumed on this hypothesis that a person with adenomatous goître in a district with a low iodine supply would become toxic if he moved to a high iodine district. There was no evidence to prove this. If iodine was administered by practitioners for some other disease, for example, in the form of potassium iodide for bronchitis, toxicity might be excited. The presence of adenomatous formation in a simple goître might not be suspected and toxic symptoms might be produced by treatment with iodine.

DR. J. F. MACKEDDIE (Melbourne) said that the subject of the discussion was the metamorphosis of simple to toxic goître. He thought that another title would probably be more interesting to many present. He suggested that they might have discussed the establishment of toxic goître without the intervening stage of simple goître. Practitioners were often confronted with patients with exophthalmic goître in whom there had been no previous simple goître; these were the conditions that worried practitioners. He thought that many important points might be missed by talking of the disease in terms of thyreoid. The disease was probably more widespread than this. He described it as a vicious circle with the thyreoid included in it.

He had been impressed at Rochester on seeing wards full of patients all admitted for one object. Plummer had distinguished between adenomatous toxic and true exophthalmic goître, but there was an extraordinary lack of difference of treatment.

When, however, toxicity was considered, other things had to be taken into account also. There might be only traces of toxicity and this toxic action might not play a very important part. He would state a case as an example. A patient had a fast pulse but not much exophthalmos. The electrographical cardiogram revealed the heart flutter. This had been present for many years. One would imagine that the basal metabolic rate had been high for that reason. Digitalis had been administered, the basal metabolic rate had fallen and the patient had become normal.

In reply Dr. Sewell said that he had not mentioned in his paper the basal metabolic rate, but he realized that it was of extreme importance. Determination of the basal metabolic rate carried out as a routine would lead to the avoidance of many mistakes.

Infections were certainly the starting point of many goîtres and these infections must be dealt with. If an adenoma began to hypertrophy, it became a foreign body and the only treatment was removal. This brought the basal metabolic rate down to normal, provided the heart was not seriously injured. Thyreoid extract was certainly the best treatment for diffuse colloid goître. Colloid goître was the effect of an overworked gland and thyroxin was very useful. In some cases given intravenously the results were dramatic.

Dr. Tebbutt said that Dr. Drennan had pointed out that hyperplasia sometimes went on to atrophy and myxœdema resulted. That was Marine's view, but he thought that very few cases of myxœdema arose in this way. In the majority of cases there was no preceding toxic goître or hyperplasia. Some speakers had passed over the question of adenomata. There was no question that adenomata were neoplasms; they should not be confused with normal hyperplastic thyreoid tissue. Other criteria of tumour formation were absence of trabecular arrangement, a different type of connective tissue and thin walled blood vessels quite unlike those of the normal thyreoid gland.

In replying to Dr. MacKeddie, Dr. Bowerbank said that the case of auricular flutter mentioned might have been an anxiety neurosis and hence the cure of the flutter would lower the basal metabolic rate.

SECTION II.—SURGERY.

The Surgery of Goître.

MR. B. KILVINGTON (Melbourne) delivered his address as President of the Section on the surgery of goître. He pointed out that during the five year period from 1922 to 1926 forty-one patients had been treated in the medical wards of the Melbourne Hospital for exophthalmic goître and eight had died, which equalled 20%. Two of these patients would have died under all circumstances. In the same period ninety-two patients had been treated surgically and six had died, which was equivalent to 7%. The improvement in mortality following surgical treatment had been due to the routine administration of Lugol's solution of iodine, the employment of nitrous oxide and oxygen anæsthesia and the rule of operating in several stages. In analysing the causes of death after operation he had found thyreoid toxæmia with rapid pulse, cyanosis and pulmonary œdema in the majority; double recurrent laryngeal nerve paralysis had occurred twice. One patient had died of hæmorrhage the result of the slipping of a ligature and another had died of tetany. Toxic disease of the thyreoid gland was associated with septic foci usually situated in the teeth. When the condition was fully established removal of the foci did not influence the goître. At times the patients with toxic symptoms were not improved by iodine medication. Mr. Kilvington stated that X ray treatment had not benefited any patients seen by him. It was possible that his limited experience of this treatment might account for this. Of three patients treated by X rays at the Melbourne Hospital one had manifested no improvement after treatment for six months, one had died after six months and one had suffered a relapse after thirteen exposures. He maintained that a single lobectomy was never sufficient. A relapse was inevitable after this operation. On the other hand it was necessary to leave a small amount of thyreoid tissue. This should be the posterior strip of the lobes, since its distribution minimized the risk of traction and damage to the recurrent laryngeal nerves. The only exception to the rule that more than one lobe should be removed, was when there was a single hyperfunctioning adenoma or multiple nodules confined to one side.

MR. H. C. TRUMBLE (Melbourne) in a paper on the value of observations of the basal metabolic rate in the surgical management of goître confined his remarks chiefly to

exophthalmic goitre and toxic adenoma of the thyreoid gland. After describing the effect of the influence of the substance secreted by the gland on the metabolism, he passed on to a discussion of the uses of estimations of the basal metabolic rate. In the first place it was of use as a diagnostic agent. In many cases the diagnosis was not in doubt, but in the so-called border line cases the accurate measurement of the vital changes might establish a diagnosis and direct the correct treatment. Repeated observations might be necessary to confirm abnormalities. Other pathological states that produced abnormalities in the metabolic rate were the fevers, the anæmias, diabetes, disorders of the pituitary gland, uncompensated cardiac lesions and asthma. The change in these conditions, however, was neither as persistent nor as profound as in hyperthyreoidism. Mr. Trumble illustrated by a case report the difficulty in diagnosis when the signs and symptoms were indefinite. He maintained that just as the treatment of diabetes was controlled by observations of the sugar content of the blood and urine, the estimations of the metabolic rate should be used to control the treatment of exophthalmic goitre and toxic adenoma. Once the diagnosis was established treatment by rest, the exhibition of iodine and radiotherapy might be instituted, but if the basal metabolic rate did not tend to become normal, operation should be undertaken. Theoretically a high preoperative basal metabolic rate should foreshadow a stormy postoperative course. This was not always the case, but it was wise to operate by stages under these circumstances. In conclusion Mr. Trumble urged that the metabolic rate should be carefully watched for months or years after operation.

DR. J. GUTHRIE (Christchurch) in a paper on the surgical aspects of goitre expressed the opinion that all adenomata of the thyreoid gland tended to produce toxic symptoms and to damage the myocardium. Adenomata and exophthalmic goitre came into the surgeon's field. It was necessary to distinguish between simple and exophthalmic goitre, in order that the surgeon might anticipate the operative findings and guard against unnecessary dislocation of the gland. Dr. Guthrie found that Searles's points in the differential diagnosis were reliable. In regard to the operation, he recommended ether anæsthesia by the open method. He divided the sterno-hyoid and sterno-thyreoid muscles as a rule. The recurrent laryngeal nerves were protected in a special manner. Drainage was always necessary to prevent pressure on the trachea. The clamping of the inferior thyreoid vessels was carried out close to the lower pole of the gland so that the blood supply to the parathyreoids was not interfered with. Lugol's solution of iodine was given before and after operation in exophthalmic goitre, but not in adenoma. Cod liver oil was equally efficacious. He had encountered tetany as the result of the removal of a large adenomatous gland. Gratifying results had followed the giving of calcium lactate and parathyreoid extract. The patient had been in normal health for six years.

DR. E. GORDON ANDERSON (Wellington) referred in his paper to the vast advances that had been made in the treatment of goitre during the previous sixty-one years. These advances had been rendered possible by the better understanding of the anatomy and physiology of the gland, by improved methods of inducing anæsthesia, by improved surgical technique, with asepsis, control of bleeding, protection of the parathyreoids and recurrent laryngeal nerves, by leaving an adequate amount of thyreoid tissue to carry on the function of the gland and by improved preoperative and postoperative treatment. He distinguished non-toxic goitres from toxic and neoplastic goitres. The non-toxic variety comprised colloid and adolescent goitre and non-toxic adenomata, while the toxic variety comprised toxic adenomata and exophthalmic goitre. While the origin of adenomata was unknown, it seemed that from ten to fifteen years after their formation they started to functionate and then produced thyroxin. Adenomata gave out a continuous supply of thyroxin and this ultimately led to visceral degeneration, heart irregularities and auricular fibrillation. In exophthalmic goitre under the influence of some unknown stimulus the gland excreted thyroxin in excess. The production was so great that the substance became an iodine-free prothyroxin. The nervous symptoms and exophthalmos were said to be the result of the action of prothyroxin. Iodine administered to the patient converted prothyroxin into the more stable and less toxic thyroxin. By giving iodine in the form of Lugol's solution before operation rendered this treatment safer. The choice of anæsthetic lay between gas and oxygen together with local anæsthesia, local anæsthesia alone and ether preceded by scopolamine and morphine. He had found scopolamine, morphine and atropine very satisfactory.

Estimation of the basal metabolic rate gave valuable information concerning the improvement wrought by medical treatment and also whether the surgeon had removed sufficient thyreoid tissue. He favoured operation for hyperthyreoidism since it reduced the time of disablement and avoided the development of visceral degeneration which occurred after a goitre had existed for many years.

Dr. E. Gordon Anderson asked Dr. Trumble within what limits the basal metabolic rate was normal. He wished to have some idea as to what level was too dangerous for the operation to be performed.

DR. F. S. BATCHELOR (Dunedin) said that the subject had been thoroughly discussed by previous speakers. His impression was that exophthalmic goitre was less frequent in New Zealand than formerly. There was an increase in the number of cases of toxim adenoma for which operation was indicated. It was interesting to know the percentage of goitres that became toxic. Mayo estimated this at 25%, but in New Zealand the percentage was higher. It was a moot question whether every patient with toxic adenoma required operation, especially where the adenomata were small. People with this condition seemed to remain in good health for many years. There was a great deal of cardiac failure of goitrous origin in New Zealand. Iodine was sold promiscuously by pharmacists and advertised freely in the papers in New Zealand and Dr. Batchelor had seen many people in Dunedin nearly killed with iodine. It was a matter in which the Public Health Department should take action.

Pressure and toxicity were the indications for operation. With atoxic adenoma enucleation was of no use. A resection had to be carried out on both sides because the adenomata were often multiple. It was difficult sometimes to find enough healthy tissue to leave. In Dunedin Hospital ether was used for the simple cases. For all others gas and oxygen were given followed by local anæsthesia. He did not like working solely with local anæsthesia owing to the psychic influence on the patient. Gas and oxygen followed by local anæsthesia seemed to be the ideal.

With regard to the technique Pemberton had told him that the recurrent laryngeal nerve was more often cut from the inner or tracheal side than from the outer. He had adopted this method and had had no trouble. He did not expose the trachea more than necessary owing to the risk of tracheitis. They all knew the value of Lugol's solution, but it was not suitable in every case. Some patients did not react; others were made worse. He had attended two girls who had died; he had not been able to restore their general condition with Lugol's solution sufficiently to render them able to stand the operation.

The two stage operation was desirable in a few cases in which the condition of the patient was poor. The surgeon should make up his mind how much he was going to do before the operation commenced and he should adhere to this. If the other side was touched, dense adhesions were formed and the next stage was very difficult.

DR. H. HARDWICK-SMITH (Wellington) wished to make a plea for more correct clinical observation. There was a tendency to accept scientific data obtained from experiments, such as the basal metabolic rate and electrocardiographs as the sole deciding factors in the treatment of exophthalmic goitre and toxic adenoma. They should observe correctly the condition of the patient especially before he or she had undergone treatment as to whether an operation was to be undertaken in the near future or at some distant date or not at all. The indiscriminate giving of iodine was not confined to the chemist and quack; they in their own profession were very liable to give iodine broadcast in every case of goitre. Lugol's solution which Plummer had introduced, had been

of great help before the operation for exophthalmic goître. He uttered a word of warning, which he found that American observers had also emphasized: the administration of Lugol's solution would so quieten the patient, bring down the metabolic rate and quieten the heart that a sense of security was given to the surgeon. This security might be a false one. One of his patients had a large toxic thyreoid of advanced exophthalmic type; he put her to bed and treated her; she improved so much, her weight increased 6·3 kilograms. Previous to operation under the administration of Lugol's solution and digitalis her pulse became normal. All this was in the period of one month or so. He operated by removing four-fifths of the gland, with perfect confidence of an uninterrupted recovery, but she died in forty-eight hours after a violent storm, her temperature rising to nearly 41° C. (106° F.). If he had been guided by his clinical observation when he first saw her, he would not have operated for some months and would have done only a partial thyreoidectomy at the first operation. The surgeon should always realize that in operation on toxic thyreoid death always lurks at his elbow.

He classified exophthalmic goître in two stages, the early uncomplicated stage and the later mixed stage. The first had very definite symptoms. The patient who had exophthalmos, was as a rule bright and cheerful, excitable and had a tendency to be irritable; was willing to do things and always wishing to be about, easily tired, but though highly strung and nervy, not shaky or depressed. In the latter stages or after prolonged symptoms, the patient became depressed, very easily tired, perspired freely and trembled. These symptoms were, he thought, due to the adrenal gland becoming affected as well as the thyreoid. He held that the prognosis in the earlier cases was better and that the basal metabolic rate was raised higher in the later cases.

There had been some discussion in regard to the anæsthetic to be given at the operation for toxic goître. He always used gas and oxygen with local anæsthesia. It was better than ether administered by the open method, because it was less toxic and the patient recovered more quickly with less sickness and what was of the greatest importance, nourishment could be given in the form of glucose almost up to an hour or two before the operation, because the patient was unconscious of the approach of an operation and nourishment could be given immediately after the operation in the form of drink and glucose and milk foods.

It was, in his opinion, very important to feed these patients because their metabolic rate was greatly increased and they needed food or otherwise acidosis was likely to occur after the operation.

In those doubtful patients during operation when it was felt that it was not wise to proceed to remove the second lobe of the gland, he inserted blanket stitches through the lobe which he left to shut off the blood supply. He had found this satisfactory.

He agreed with Mr. Kilvington that it was wiser to leave a small layer of the posterior portion of the lobes, by that means they could avoid the laryngeal nerves and they would not be liable to remove the parathyreoid tissue. He had not had a case of tetany among a large number of patients over a period of years. He ascribed this to the procedure of leaving the posterior layer of the lobes.

A point that should be borne in mind when operating was to handle the gland very gently, for it seemed that absorption from the gland at the time of operation was the main cause of the storm which followed.

He raised the question of how far the removal of four-fifths of the thyreoid gland would affect patients in the future. He had had several patients who had had large toxic thyreoid glands removed some years previously. They had returned with definite hypothyreoid symptoms bordering on myxœdema.

Mention had been made of transplantation of the gland. Fourteen years before he had transplanted a mother's thyreoid gland into her child's neck, aged one year, who was a typical cretin, not a mongol. He had not seen the child afterwards till it was ten years old; though it had had no thyreoid medication during the interval, there was no sign of cretinish, but the child was dwarfish and old looking with a dryish skin and hair, but intelligent though backward; there were no signs of imbecility. He gave the child thyreoid medication, realizing that the graft was not sufficient for the child. She improved and did moderately well at school, but was backward. At the age of fourteen her periods commenced regularly. Then the mother brought the child to him because she noticed a small lump in the neck. On examination he found that it was the small graft which had taken on physiological growth at puberty.

MR. H. B. DEVINE thought that there could be no routine anæsthetic or method of operating. The surgeon had to visualize the exact pathological condition which was present in the particular patient and adapt the anæsthetic and his methods to that. For example, in the almost "burnt out" exophthalmic goître in an old person with the usual accompaniment, cardiac disease, nitrous oxide-oxygen mixture was not the best kind of anæsthetic. In extremely serious conditions of this kind the patients were amenable to local anæsthesia; the operation should be done under local anæsthesia. The effect of consciousness and fear did not come into the problem. In fact the effect of fear was exaggerated and there was an element of humbug in its management. In other patients who were good "risks," it was possible and advisable to operate under the lightest possible ether anæsthesia; indeed, it was not generally understood how little ether sufficed; it was so little that the effect on the patient was comparable to that of nitrous oxide. The latter anæsthetic he thought should be reserved for the psychologically difficult patient with toxic symptoms. He did not believe in combining any of the anæsthetics with scopolamine or morphine. The patients did not do so well after. If local anæsthesia were used and Lugol's solution given, good results could be expected even when the condition was severe. Another very important principle in the surgical management of toxic goître was the question of operating in stages. Mayo advocated a one-stage operation in which the greater part of both lobes was removed, if Lugol's solution was given before the operation. He had no doubt whatever from his own experience that the Lugol treatment rendered the operation much safer, but he would like to issue a warning not to do the one-stage operation as a routine. The crucial points and *desiderata* in the operation, dexterity, speed, hæmostasis, shortness of operation and therefore minimum of anæsthesia might not be attained by any particular surgeon. He wished to state that careful observation of a large number of goître patients operated on in the Mayo Clinic had revealed that the patients were operated upon much earlier in the course of the disease than they were in Australia. Mr. Devine said that he still used operation in stages in the worst cases.

DR. J. RAMSAY (Launceston) said that his experience went back to the beginning of the century when he performed these operations under local anæsthesia with Theodore Kocher's technique. Less ether was needed when local anæsthesia was employed. He had seen Crile operate four years previously. Delicacy of manipulation affected the after results and local anæsthesia made the surgeon more gentle. He should avoid holding the gland if possible. He always used a knife and not scissors in cutting thyreoid tissue. He always tried to complete the operation in one sitting, but he was guided by the patient's general condition. Lugol's solution has modified their ideas. It was efficient both before and after operation in counteracting toxic symptoms. Lugol's iodine solution might not produce an ameliorating effect in some cases of toxic adenoma. If no benefit followed in two or three days operation should be undertaken.

In regard to X ray treatment two of his patients just after the climacteric had developed myxœdema. The difficulty in respect of recurrent laryngeal nerve arose where a tongue of thyreoid tsisue existed behind the trachea.

DR. GORDON CRAIG (Sydney) said that he had listened with much interest to the papers on the surgical aspect of goître. One point he would like to emphasize was that the mortality was greatest in the first forty-eight hours. The severe symptoms and the storm in exophthalmic goître

were supposed to be associated with an overdose of thyreoid material. In reality it might be due to a deficiency of this element. When maniacal symptoms occurred there was at times great improvement with intravenous injections of thyroxin. Glucose-saline solution gave the patient fluid nourishment and comfort. He had had the same anæsthetist for seven years and had used ether administered by the intratracheal method in an increasing percentage of all major cases. He criticized the percentage of deaths that Dr. Kilvington quoted with intratracheal anæsthesia. This was reserved for bad "surgical risks." The death was put down to the anæsthesia and not to the condition. The smooth recovery made him a strong advocate of intratracheal anæsthesia.

DR. A. M. BIGGS (Dunedin) advocated the use of ether administration through the rectum. He recommended daily rectal saline enemata and daily hypodermic injections of saline solution until the day of operation when these were replaced by morphine and scopolamine and rectal injections of ether. Within half an hour the patient was asleep and only required a few drops of ether on the mask. The rectum was washed out as soon as the operation was completed. Rectal injections of saline and glucose solution were given for the next forty-eight hours. The objection that there was no control over the amount of ether absorbed, was theoretical only.

In answer to Dr. Anderson DR. TRUMBLE said that the normal basal metabolic rate was fixed by Benedict at 10% above or below normal. He could not fix the danger line. It had to be decided whether in bad cases the figure would come down or whether it was necessary to prevent the rate rising higher by operating.

Dr. Batchelor had asked how many cases of adenoma became toxic. The question of malignancy was important and for this reason also adenomata should be removed. He agreed that Lugol's solution did not always yield good results. As Dr. Hardwick-Smith had said the basal metabolic rate was a help to clinical methods only especially in border line cases.

In reply to Dr. Ramsay he pointed out that bad results were to be expected if Lugol's solution was used for patients with toxic adenomata.

DR. KILVINGTON said that the speakers had agreed on several points. Nearly all had agreed that the operation for severe goitres should be performed in two stages. There was an uncertain element in the border line cases. It was a question whether to remove the adenoma before the toxic symptoms appeared. It appeared that there was a definite risk in the promiscuous use of iodine as advocated by pharmacists. Preliminary use of iodine might not be advisable in adenoma, but the great difference and really the only important one was in the choice of anæsthetic. He thought that the great advantage of gas and oxygen was that the patient soon regained consciousness and that there was no vomiting.

SECTION III.—OBSTETRICS AND GYNÆCOLOGY.

The Present Position of Obstetrics.

DR. J. W. DUNBAR HOOPER (Melbourne) read a paper on the present positions of obstetrics and gynæcology. He said that forty years previously the practice of obstetrics had attained a very much higher position in the profession than it did at the present time. In those days the dangers of "meddlesome midwifery" had been impressed on the student and young practitioner on every possible occasion. The term "antenatal supervision" had been unknown. After tracing the gradual recognition of obstetric physicians in connexion with hospitals, Dr. Hooper said that the trend of obstetrics had advanced to a position where the dangers of "meddlesome midwifery" tended to be lost sight of and the advantages of timely operations were impressed on the students. Dr. Hooper described the best obstetrician as one who remembered the dangers of meddlesome obstetrics, the risks of hurry and the extreme value of antenatal work and caution in diagnosis and who had the ability to perform Cæsarean section or pubiotomy with extremely careful aseptic technique. Dr. Hooper pleaded for the abandonment of the term midwifery and the substitution of the correct name obstetrics and emphasized the necessity for adequate recognition of obstetricians both by medical practitioners and the general public. He quoted the maternal mortality figures for Australasia and for different parts of the world and pointed out that conditions in Australasia were such that the figures should be reduced. He drew attention to the necessity for education of the public in regard to antenatal care and of the medical profession in regard to the services of consultants in obstetrics. Practitioners were exercising more care in reporting mortality when due to child-birth and therefore the statistics would manifest an apparent increase in the death rate. He concluded his reference to obstetrics by quoting the words of Michael Angelo: "Perfection is made up of trifles, yet perfection itself is no trifle."

In regard to gynæcology Dr. Hooper went back to 1870 and traced the steps in the recognition of gynæcology as a speciality. He spoke of the tendency of surgeons to regard gynæcological operations as part of their sphere of action and pointed out that no honourable gynæcologist would undertake the surgery of fractures or of head injuries in regard to which he had had no special training. He emphasized the necessity of post-graduate work for gynæcologists and drew a complete word picture of the qualifications of a successful gynæcologist. Finally he pointed out that the provision made in hospitals for the treatment of gynæcological patients was quite inadequate as far as the number of beds was concerned.

DR. A. NORMAN MCARTHUR (Melbourne) said that he wished to thank the President for his excellent address and to show his appreciation of the extremely valuable advice given.

DR. F. R. RILEY (Dunedin) was glad that the President had drawn attention to the fact that there was not sufficient importance given to the subject of obstetrics. In New Zealand the nurses during their training often attended more women in labour than the students in their course. A young practitioner's career depended on his knowledge of obstetrics; the general practitioner could not afford to make mistakes. He thanked the President for his instructive address.

DR. H. JELLETT (Christchurch) thanked the President for his most instructive address and hoped that it would be assimilated. He wished to emphasize two points, the necessity for conservative obstetrics and the teaching of obstetrics to students. Dr. Riley, he considered, should be made a professor and should be given more material and more scope for the teaching of this most important subject.

PROFESSOR J. C. WINDEYER (Sydney) also wished to convey his thanks to the President. He desired to see the practice begun in Victoria by Dr. Hooper of the standardization of all hospitals continued throughout Australia.

DR. DUNBAR HOOPER replied briefly.

Insufflation of the Fallopian Tubes.

DR. C. F. MORKANE (Christchurch) read a paper on Rubin's transuterine insufflation of the Fallopian tubes. His observations were based on a study of one hundred and forty cases. He described the apparatus and the technique for carrying out the test. In most cases the tubes were patent at a pressure of seventy to eighty millimetres of mercury. In a number of cases the pressure went on to about one hundred and twenty millimetres and then fell quite suddenly to seventy millimetres or a little more. He thought that this sudden fall was due to sudden relaxation of spasm of the uterus or tubes. It was not very uncommon for the pressure not to exceed forty millimetres. If no air passed through at two hundred millimetres pressure, another trial was given. If a second test revealed occlusion, a confirmatory test was carried out after an interval of four months. Dr. Morkane described the signs found in partial occlusion and pointed out that the location of pain during the performance of the test generally served to fix the site of the obstruction. A slight cervicitis was not a contraindication to the use of the test. Before the test was made a careful pelvic examination should be made to eliminate an existing infection. He had not been able to trace an infection as result of the test. Of his 140 patients 37 or 26·4% had had occluded tubes. Eighty-six suffered from primary sterility and in twenty-seven of

these (31·4%) occlusion was present. Among fifty-four women with relative sterility only ten (18·5%) had signs of occlusion. Although he had used the test mainly for diagnostic purposes, he had gathered the impression that it might also be used for therapeutic purposes. Dr. Morkane gave a list of the reasons for which he had used the test after conservative operations on the tubes and in conclusion expressed the opinion that the test should not be used indiscriminately and that it should not be employed without a careful pelvic examination.

DR. W. ANDERSON (Queenstown) said he had watched Dr. Victor Bonney using Rubin's test. He never employed a pressure above 140 millimetres. If the tubes were occluded, he opened the abdomen and frequently found them inflated with air. At the thinnest spot the tube was incised, air was allowed to escape and the hæmorrhage was arrested. Salpingostomy was then performed. He remarked that pregnancy often followed this treatment.

DR. HENRY JELLETT (Christchurch) described the original apparatus used by Rubin, which comprised a "Sparklet" syphon. He agreed that salpingostomy was a deceptive operation. Hydrosalpinx in his opinion was the only condition for which this operation was justifiable. In these patients a large sized ostium was present; all raw peritoneal areas should be completely sewn over.

Long, congested, flabby tubes were the type in which evidence of partial blockage was obtained. These tubes were liable to kink. Before applying Rubin's test, a careful pelvic examination should be made.

DR. A. NORMAN MCARTHUR (Melbourne) quoted cases in which double ectopic gestation had followed salpingostomy operations. He advocated an extensive salpingostomy; the spot where the tube was considered to be normal and healthy was localized; after excision of the diseased portion of the tube, careful eversion of the mucous membrane was carried out. After salpingostomy he always used Rubin's test to discover if the tubes were still patent. He considered that the test was a very valuable aid in diagnosis.

DR. F. R. RILEY (Dunedin) said that Dr. Morkane's apparatus was an extremely simple one and easy to use. The test was one of great diagnostic value. He had performed salpingostomy on very many occasions, but had heard of pregnancy following the operation only in a few instances. He quoted one case in which the woman had to have two operations for ectopic gestation after salpingostomy. Before operating the surgeon should inform the patient of the doubtful result and leave the decision to her.

DR. A. HALFORD (Brisbane) said that Rubin's test had done away with all the old operations for sterility, such as dilating and curetting and plastic cervical operations. He used a short glass tube with a rubber buffer instead of a long tube. He rarely used a pressure more than 140 millimetres. The vagina and cervix should be most carefully sterilized before the test was applied.

DR. MORKANE said that he advised against operation only when the occlusion was at the uterine end of the tube. He had no experience of transplantation of tubes, but he had performed salpingostomy a number of times. He considered the 140 millimetres pressure useless; a much higher pressure was often required. A definite opinion of non-patency should not be given on the result of one test only. The negative result might be one due to spasm; the result of the next test might indicate patency of the tubes. He did not perform cervical operations. He agreed that the vagina and cervix should be thoroughly sterilized. If there was much bleeding, while the cannula was being passed, he abandoned the test for the time being. The test should be performed after the menstrual period. period. There was always the question of an early pregnancy, if performed before the period.

SECTION V.—PREVENTIVE MEDICINE AND TROPICAL HYGIENE.

The School Nurse and the Public Health Nurse.

DR. HARVEY SUTTON (Sydney) read a paper on the school nurse and the community point of view. He said that in New South Wales and Victoria the school nurse was essentially a home visitor or health visitor whose duty it was to "follow up" children found defective by the school medical examination. She thus established a personal link between the school medical service and the home. As a result of the nurse's visits effective results were obtained in from 60% to 80% of cases. Apart from visiting the nurse had other duties to perform. She assisted the doctor in his inspection of school children and she carried out "clean surveys" of the children in regard to pediculosis and so forth. She was also able to report on such questions as milk consumption, malnutrition and venereal infection in children.

Dr. Sutton then discussed at some length the question of the training of school nurses. He pointed out that there was no definite course of training for this purpose. The nurse's training should be divided into a preliminary and a professional stage. Before certification the nurse should have some experience in home visiting. This type of auxiliary nursing work should be developed in connexion with all children's and general hospitals in the same way as was done in connexion with obstetric hospitals. If possible, a period of three months should be spent by each nurse at an infectious diseases hospital or in infectious diseases wards. After certification nurses should undergo special training for public health positions. The subjects in which they could specialize were: infant health, school health, industrial health, tuberculosis and closely allied were midwifery, bush nursing, mental hygiene and medical school nursing. Dr. Sutton advocated the establishment of a special course for health visitors and the issuing of a certificate to successful candidates.

DR. M. H. WATT (Deputy Director-General, Department of Health, New Zealand) read a paper on the public health nurse in relationship to administrative preventive medicine. He said that the nurse furnished the ideal medium through which the mother could be approached with advice and instruction. He detailed the various duties which a public health nurse might undertake and said that her most important functions were to insure the health and well-being of the mother during her pregnancy and of the child during infancy, preschool and school days. A public health nurse should be a trainee of a hospital training school and should have passed through a course of training in midwifery. In addition she should undergo a further period of specialized training in preventive medicine. He discussed the question as to whether the nurse should work as a community nurse, undertaking both preventive and curative nursing in a restricted area or whether she should devote her time solely to preventive nursing. He gave his reasons for deciding in favour of the former. This system would not be practicable for many years on account of the expense and the lack of trained personnel. In these circumstances it was not surprising to find that public health departments were using the highly trained nurses for educational and instructional purposes. Dr. Watt gave particulars of the public health nurses employed in New Zealand. Many of them suffered from lack of proper training. It was the intention of the Department to provide a proper course of instruction in public health nursing and only those who had taken this course, would be accepted as recruits.

DR. ADA PATERSON (Director of School Medical Service, New Zealand) said that in New Zealand they had twelve school medical officers and thirty-two school nurses; they were, therefore, comparatively well off for nurses. If possible the school medical officer had two nurses, one of whom preceded the former and made a preparatory survey seeing that all was ready for the visit. Improvement had resulted from the employment of school nurses; as a result of treatment 80% efficiency was attained and in selected areas even 90%. The personality of the nurse counted most of all. Training was essential, but the nurse should not be too long in qualifying, though the wider the scope of the training, the better. It was difficult to distinguish between junior and senior nurses in remuneration and in duties. The scheme for the public health nurse outlined by Dr. Harvey Sutton would obviate this difficulty. Treatment of the preschool child had already begun in New Zealand on a definite basis, beginning with the *Kindergarten*. Extra nurses would be needed. In New Zealand they had an advantage as compared with New South Wales, in that this work was controlled by the Health

Department and not by the Education Department. She agreed that cadet nurses taken on after completion of their training would be a good scheme. She agreed that a scheme of training was essential for the public health nurse of Australia and New Zealand.

DR. P. T. S. CHERRY (Port Adelaide) asked if it were true, as Dr. Harvey Sutton had said, that 37·5% of Australian children were found to have defects. He thought that searching for focal sepsis was overdone in schools, for example, the recommendations for tonsil enucleations. Dr. Harvey Sutton had stated that throat and nose defects were present at school entrance. He would like to ask were the 37·5% of the diseases that were encountered, contracted before attendance at school commenced; this did not seem probable. Speaking personally his own children had not contracted any disease till they attended school. He would also like to know how the school nurses got into the homes; often their visits were resented. He also asked whether children who had been in contact with others suffering from infectious disease were prohibited from attending school and restricted in their ex-school activities, such as visiting the cinema. He had noticed many cases of lack of control along these lines, for example, the schools were closed and the cinemas remained open.

DR. G. HALLEY (Chief School Medical Officer, South Australia) held that it was an advantage for the school nurse to visit the school with the school medical officer. To be at the actual examination saved time and made for efficiency. The medical officer could examine twenty to thirty children more a day if assisted by a school nurse than if working alone. Subsequently the nurse followed up the children, visiting them in their homes. She was also given special duties, such as swabbing in diphtheria, vaccinations and the like. She agreed that there should be some special training for public health nurses and that the Royal Sanitary Institute course was not really suitable.

DR. HARVEY SUTTON in reply noted that there was agreement in regard to the need for public health nurse training. The meeting should recommend that a definite course should be outlined for this training in Australia and New Zealand. In Australia the experience was that specialized nursing service should be utilized in metropolitan and urban areas. Medical work had become so wide in scope that specialization was essential.

In reply to Dr. Cherry he said that it was true that over 30% of medical defects were found in schools, but this included defects of vision. In connexion with focal sepsis he instanced one high school in Sydney with 420 boys of whom 111 had been operated upon for tonsils and adenoid vegetations. This was in accord with the standard of the profession before the department took control. The department could not alter, but must follow the standard adopted by the profession. The school nurse went to the home to help; she had no legal powers, but tact gained for her an entrance into almost all homes and they got all the information they needed. In New South Wales contacts were prohibited from attending picture shows in the presence of infectious disease epidemics, but the law was difficult to enforce.

In conclusion he moved a motion to appoint a small committee to look into the matter of the training of the school and public health nurse. Dr. M. H. Watt, Dr. G. Halley, Professor C. E. Hercus and Dr. Harvey Sutton were appointed members of a committee to draw up a resolution to submit to the general meeting of Congress.

SECTION VII.—OTOLOGY, RHINOLOGY AND LARYNGOLOGY.

Neuro-Otology.

DR. R. H. PULLEINE (Adelaide) read a paper on neuro-otology. He first of all referred to pioneer workers on the subject and then proceeded to trace the exterioreceptive paths from their origin to their destination. He showed that the vestibulo-ocular tract, the vestibulo-cerebellar-cerebral tract and the vestibulo-spinal tract were the neuro-otologist's main roads. They governed equilibrium and any two of them would function after vertigo and disturbance caused by destruction of the remaining one had subsided. The signposts to these three roads were vestibulo-ocular nystagmus, vestibulo-cerebellar-cerebral vertigo and vestibulo-spinal falling. In discussing nystagmus Dr. Pulleine confined his attention to the slow or vestibular component. Nystagmus occurred only when the usually perfect balance of the vestibular centres was disturbed. Vestibular vertigo was the subjective sensation of disturbed relationship of the individual to space. It could be experienced in its mildest form by rapidly spinning round as in a *pirouette*. It was a cerebral disturbance and its reaction movement, past pointing, was also of cerebral origin. In discussing vestibular tests Dr. Pulleine said that he had used entirely the rotatory and caloric tests. He had found the galvanic which was the most useful of all, too disagreeable for general use. All the necessary information could be obtained by a careful observer with water at 20° C. (68° F.) used from a common douche can. Dr. Pulleine then described the method of applying the test. He said further than he had applied vestibular tests for six years to patients referred to him for disturbance of equilibrium. He pointed out that by reaction to the tests labyrinthine conditions could be clearly distinguished from acoustic tumours. Acoustic tumours had a well defined syndrome. Cerebellar neoplasms were capable of being differentiated. Toxæmic conditions from tobacco and dental infections yielded absence of vertigo and past pointing. In functional conditions great variability of response was obtained to the tests. Spontaneous vertigo occurring in eye conditions could be eliminated by the vestibular tests. In conclusion Dr. Pulleine reported in detail several cases in which he had used the tests. The conditions included tumour of the cerebello-pontine angle, cerebellar neoplasm, toxæmia of dental origin and toxæmia following tobacco poisoning.

Vestibular Reactions.

DR. H. M. JAY (Adelaide) read a paper on the diagnostic value of vestibular reactions. In considering the conduct of the tests certain factors which might have a bearing on the results, should not be overlooked. In the first place there was the previous knowledge of the patient. The second factor comprised variations in technique. In the third place there were errors in observation and the last factor included errors in interpretation. It was here that most mistakes were to be found. There were several reasons for this. The knowledge of the functions and reactions of important parts of the brain stem were incomplete. There was the factor of individual error in consideration of the responses elicited. Further fresh mysteries, such as the otolith reflexes and the postural reflexes of Magnus, Kleijn and Quix, were being introduced.

Dr. Jay had applied vestibular tests to fifty-eight patients. In one group of sixteen no definite diagnosis had been arrived at by the physician in charge of the patient. In a second group of six the subsequent history of the patient, taken in conjunction with the clinical findings, justified the assumption that the diagnosis made from all available data was probably correct. The reports given as a result of the tests were in accordance with the final diagnosis in two instances. In a third group of eighteen patients the diagnosis was finally proved or disproved. In regard to thirteen the test provided useful information. In eighteen cases in a fourth group no conclusion could be formed as a result of the tests. In the whole series there were two proved peduncular lesions and these were correctly diagnosed. The tests were regarded by Dr. Jay as of value in lesions of this description. He also concluded that negative findings were of distinct value in eliminating disease of the brain stem.

DR. HARDIE NEIL (Auckland) said that the demonstration was a complete exposition of the modern conception of the anatomy and physiology of the vestibular apparatus. The diagrams and slides shown were particularly helpful. There was one principal point, the difficulty in tracing the tracts of the vertical canals through the middle peduncle. The clinico-pathological evidence, however, was positive that the tracts described by Jones were in existence. The apparent histological deficiency could not be accepted as excluding as the neurologists admitted, that they could not determine the existence of continuation of fibres upwards from the red nucleus. Yet the tract from the cerebellum upwards to the red nucleus must carry the motion sensing

or vertiginous sensations. The inference was that there was a cortical centre for vertiginous sensation, possibly not a definitely localized centre; the association fibres undoubtedly distributed to the cortical area responsible for the reception of vertiginous impulses. These disturbing sensations of vertigo coming from labyrinthine stimuli passed up from the superior peduncles through the red nucleus and onwards through tracts whose existence could not be ascertained by histological methods. In regard to testing by various methods much trouble was due to a lack of trained assistants. In large clinics trained nurses were a great help. In dealing with the conditions in which these tests were of value, he stated that they were valuable in unilateral eighth nerve lesions before any ocular signs of intracranial pressure had been noted. Bárány's tests yielded information. The cerebello-pontine angle lesion syndrome was a definitely established and accepted entity. These tests were essential for the elimination of the cerebellum in vertigo, when lesions of the posterior fossa and labyrinth had to be excluded and in chronic suppurative mastoiditis when the vital question of involvement of the labyrinth was raised.

SIR JAMES BARRETT (Melbourne) mentioned a case of double tumour of the auditory nerves; there was cerebro-spinal rhinorrhœa, total absence of caloric reaction with anomalous responses to hearing tests. *Post mortem* examination revealed tumours of both auditory nerves. He said that the disappearance of the caloric action occurred long before any optic neuritis in these patients.

DR. H. F. SHORNEY (Adelaide) as a practical point said that it was not necessary to use cold water at 20° C. (68° F.). Water at room temperature would answer as well. There was no need to use a douche can with prolonged douching. Water syringed into the ear and allowed to remain for half a minute was sufficient.

DR. W. J. MACDONALD (Wellington) mentioned three small points of technique: (i.) In past pointing there was often an involuntary movement of the observer's finger unless means were taken to avoid it; (ii.) a device consisting of strong convex glasses which yield clearer observation in indefinite nystagmus. They prevented the patient from fixing and they magnified the movement. (iii.) Sir Dundas Grant's cold air apparatus was useful instead of cold water.

DR. HARDIE NEIL showed cinematograph films for Dr. Isaac Jones, of Los Angeles. These films depicted orientation in animals, cats and dogs, lesions in animals and diseases in animals. Another film illustrated the results of Bárány's tests in various human diseases.

SECTION VIII.—NEUROLOGY AND PSYCHIATRY.

The Pathology of Mental Disease.

DR. OLIVER LATHAM (Sydney) selected the subject of the place of pathology in mental hospitals for his address as President of the Section. He paid a tribute to the late Frederick Mott whose work in the pathology of the central nervous system had been of great value. He also referred to the work of the late Eric Sinclair and of Kulchitsky, R. G. Rows and Froude Flashman. In attacking the problem proper of his paper he pointed out that little interest was taken in the pathological work in connexion with mental disease. Some recognized the importance of the work and grasped every opportunity to carry out investigations. The Inspector-General of Mental Hospitals in New South Wales had arranged the teaching of pathology to graduates taking the course for the diploma in psychiatry to include *post mortem* work, the performance of the Wassermann test and other biological tests, the examination of the cerebro-spinal fluid and blood, the preparation and staining of sections, the carrying out of certain bacteriological work and the making of vaccines from cultures grown from discharges and evacuants. The student was further instructed by means of the epidiascope in lectures on the pathology of mental disorders. In this way the central laboratory of the mental hospitals served as a connecting link between the hospitals and the university. The laboratories served a second, direct purpose in the performance of tests as aids to diagnosis. The necessity for the performance of the Wassermann test and for the application of the goldsol test in mental hospital practice was beyond doubt.

Dr. Latham indicated some of the diseases in connexion with which pathological investigations had proved particularly useful. In the first place he dealt with the malarial treatment of general paralysis of the insane. It was important in Australia to insure the complete absence of malarial parasites from the blood of patients before they were allowed to mix with the community. *Encephalitis lethargica* was another disease whose pathology was of importance. The pathologist in mental hospitals should be prepared to determine the cause of death of persons sent to the hospitals with the diagnosis of general paralysis of the insane, acute confusional insanity, hysteria or other forms of psychosis. The responsibility of reducing the incidence of enteric fever and of dysentery was borne by those in charge of the pathological laboratories. The mental hospital population was inoculated every three years against enteric fever. In nine years only two inoculated persons had contracted the disease and ten uninoculated out of an annual population of approximately eight thousand. Researches into the condition of the ductless glands in epilepsy and other mental diseases had been carried out with unexpectedly good results. Dr. Latham dealt in some detail with other lines of research that had been carried out of a biochemical and histo-pathological nature. In conclusion he maintained that it was the duty of the pathologist to the mental hospitals to help the psychologist to realize how much mental function depended on neuronic activity. He accorded the conception of mental trauma the second place.

DR. GUY P. U. PRIOR AND DR. ALWYN L. KINNA (Parramatta) contributed a paper on some physical causes of mental disorders. After referring to the well known relationship between physical conditions and mental states, turned their attention to the effect of infection on the mind. In two patients suffering from an acute maniacal affection and advanced melancholia respectively the extraction of septic teeth brought about an intermediate improvement in the mental condition. The local treatment of urinary infections often resulted in complete recovery. Vaccines had been prepared from bacteria found in the urine or fæces of thirty-two patients with recovery in eighteen. They recited the case histories of two patients with mania to illustrate the beneficial effect of vaccine treatment. The vaccines made from fæcal organisms produced very good results in adolescent psychoses. Fæcal vaccines had also been given to four epileptics. No benefit was anticipated. In three none resulted, but in the fourth a distinct amelioration of chronic constipation was noted. The vaccine had no effect on the frequency or number of attacks. In regard to endocrine dysfunction the authors stated that under certain circumstances the mental symptoms were wholly dependent on the glandular changes. The diagnosis might be difficult, but when appropriate treatment was instituted, the results were remarkable. They cited cases of mild athyreoidism, treated with "Varium" and thyreoid extract with recovery, of hyperthyreoidism treated with pituitary gland and "Tricalcine," of a condition of fear treated with adrenalin and suprarenal extract, also with excellent result and of mixed glandular dystrophy and infection treated successfully with pituitary and thyreoid extracts and fæcal vaccine. Other cases were also quoted.

DR. JOHN BOSTOCK (Newcastle) set out in a paper his views on the causation of mental disorders with special reference to sepsis and endocrine derangement. He recognized that a very large number of alleged causes of insanity appeared in the literature. Cotton had stated in 1921 that 70% of patients admitted with mental conditions of all kinds had been cured by a process of detoxication. Later Cotton had claimed that even better results could be achieved. Although these contributions had been adversely criticized, Dr. Bostock sought opportunities to test the claims of Cotton. Two adolescents and one young man suffered from excitement and schizophrenic trends. They were treated by high rectal injections and suggestion and all recovered. Other patients were treated by enemata without any suggestion and the results were disappointing. Indican was frequently found in the urine of newly admitted patients,

but Dr. Bostock pointed out that removal of the intestinal stasis had proved disappointing as far as the mental conditions were concerned. Hypoacidity was common in mental disorder, but it was known that achlorhydria and good health were at times associated. Hypothyreoidism was discovered in association with arteriosclerosis and mental disease. He assumed that the deficiency was due to vagal deficiency. Working on another subject he had found support to the suggestion that the optic thalamus was the seat of pain, sensation of heat and cold and of the emotions. He therefore postulated that there might be a thalamo-thyreo-vagal balance. He argued that as mental disorders could not be classified into separate compartments, the components were psychic involvement, physiological, pathological, endocrine and septic changes. He evaded the difficulty of assessing the precise amount of villainy attributable to toxin, hormone, psychic or physical factors by belittling them all. Aberrant infantile sexualities were not to be blamed, but rather the later social embarrassment. This upset the psycho-somatic equilibrium and the disordered function resulted.

DR. H. M. NORTH (Gladesville) also read a paper on sepsis and endocrine disorder as a basis of insanity. His paper resolved itself into a critical analysis of the claims of Cotton. Cotton had come to the conclusion that the endocrine dysfunction was secondary to sepsis. The mental accompaniments of endocrine disturbances were unaffected by glandular therapy. Therefore the endocrine glands were not at fault as far as the insanity was concerned. He had excluded other causes of insanity and then had turned his attention to sepsis. Teeth had been removed in 100% of patients, tonsils in 75%; many patients had been required to suck a Rehfuss stomach tube for hours. Vaccines and sera had been given to 83%, while surgical removal of the *cervix uteri* and of the uterus had been carried out on many patients. In the male the seminal vesicles had been removed on many occasions. Investigation of the colon and its resection had also been undertaken in many patients. Cotton had claimed 82% of recoveries. Dr. North had discovered from the papers that this 82% represented the proportion of the patients discharged from the hospital. He ventured to suggest that an institution in which such radical procedures were carried out, might acquire a reputation calculated to diminish its admission rate and still more its readmission rate. Kopeloff and Kirby had repeated Cotton's work on one hundred and twenty patients who had been examined by competent specialists to determine the presence of focal sepsis. Sixty-two had acted as controls and fifty-eight were treated by operation and other means to eliminate the focal sepsis. The results of these trials justified the authors to state that no relation existed between focal sepsis and functional psychoses. Dr. North remarked on the fact that in his own experience surgical treatment was frequently carried out before the patients came into the hands of the psychiatrist and that some of these operations might be avoided if the advice of the latter were sought before any operation was undertaken. He regarded it as significant that postoperative psychoses were more frequent among females than in males, but it was of equal incidence in connexion with operations common to the two sexes.

DR. S. J. MINOGUE (Gladesville) also read a paper on the same subject. He found that patients suffering from acute confusional states who recovered after the removal of an obvious septic focus and those suffering from proven endocrine disturbances formed but a small percentage of the patients admitted to hospitals for the insane. He wished to inquire into the question whether diseases such as primary dementia, manic-depressive insanity, paranoia, senile psychosis, dementia and so forth were wholly or in part caused by focal sepsis or endocrine disturbance. He admitted that glandular therapy in these conditions had proved disappointing. Cotton had stated dogmatically that focal sepsis was at the base of all mental diseases. Wherever the focus was, it had to be eradicated and the toxæmia combated by autogenous vaccines. Dr. Minogue pointed out that the evidence was incomplete, unconvincing and unproven. Cotton had claimed that 82% of the patients discharged had recovered. It appeared that the percentage of recoveries calculated on the number of patients discharged would be as high in any hospital, if the calculations were made after the exclusion of patients suffering from diseases like general paralysis of the insane, senile dementia and organic dementia and also after the elimination of those who had died. Kopeloff and Kirby had proved that the removal of septic foci was of no appreciable therapeutic value to their patients. Dr. Minogue found that an approximately accurate prognosis could be given in regard to the condition of about 80% of their patients. When patients who would recover under all circumstances, were given endocrine therapy, thyreoid-manganese treatment and other fanciful remedies, it was not reasonable to associate the recovery with the treatment. The understanding of the psychoses was still shrouded in profound obscurity and their treatment was empirical and symptomatic.

DR. J. MCPHERSON (Kihikihi) referred to the pathological equipment required for mental hospitals. The laboratory work done in them in New Zealand since the war had been very small and he was rather sceptical of the utility of that which had been done. Even the work of Sir Frederick Mott had recently been questioned. Regarding the cure of general paralysis of the insane, the latest reports were disappointing. It was too soon to talk of a cure of general paralysis by malarial treatment.

He had had long experience in general practice and his impression had been that *pyorrhœa alveolaris* was rather a protection against mental disorder than a cause of it. Much of the endocrine therapy, in his experience, was very disappointing.

DR. H. F. MAUDSLEY (Melbourne) said that there was a strain of pessimism among medical men concerning mental disorders, in some respects due to the strong public prejudices against anyone who had been certified. The possibility of cure was greatly increased by getting the patients early, before the psychosis was thoroughly established. Out-patient clinics were very necessary and very effective. There was much need for general education.

He had had good results in the malarial treatment of general paralysis of the insane, though it was too early to state that the patients had been cured. There was often a difficulty in getting the malarial parasite and some place should be established from which a supply could be dispatched.

DR. ST. L. GRIBBEN (Auckland) said that in Edinburgh good results had been obtained in the patients with early general paralysis of the insane treated by malaria. He further elaborated the system of pathological investigation, outlined in Dr. Latham's address.

DR. S. A. MOORE (Dunedin) referred to the focal sepsis side of the question. In a number of his patients the clearing up of foci of infection had resulted in considerable amelioration of the mental symptoms. He had seen patients with rheumatoid arthritis in whom improvement of the general condition had been accompanied by a corresponding improvement in the mental condition.

In endocrine therapy he had had good results only with thyreoid administration.

DR. O. LATHAM replied to a few questions that had been raised and summed up the discussion. He appealed for a broad-minded view of the whole position.

SECTION IX.—PÆDIATRICS.

Infant Feeding.

DR. A. JEFFERIS TURNER (Brisbane) read a paper on infant feeding. He said that he wished to make only one dogmatic statement, that breast feeding was greatly superior to any method of artificial feeding. He imagined that the low infantile mortality of New Zealand was largely due to care in instituting and maintaining feeding from the breast. In Queensland there was much carelessness and indifference in regard to this matter. There was no adequate answer to the question as to why breast feeding was superior. He referred at some length to the work of Wardlaw and Dart on the percentage composition of the milk of Australian women. He drew attention to the wide variation of the fat content found by these observers and to the smaller variation of protein and lactose. It

was evident that only a small proportion of the infants got milk of average fat content. From these observations he drew several conclusions. In the first place very considerable deviations from the average composition of breast milk were of little importance, provided the infant was thriving. In the second place he drew attention to the offer of the manufacturer of a well known brand of dried milk to make free analyses of mother's milk for medical practitioners. He felt sure that this would do harm. The milk of mothers which "did not agree with the baby," would seldom be found of average composition. The consequence would naturally be that a larger number of infants would be fed on dried cow's milk and there would be a larger infantile mortality. In the third place the differences found between the average composition of the milk of Australian women and that of Europeans and Americans might partly explain why Australian breast-fed infants were heavier than those of these countries.

Turning to artificial feeding Dr. Turner said that to some extent the infant might be adapted to his food by care and by patience, but this was a slow process and not always successful. A success would be proportional to the flexibility of the methods used and not to their rigidity. Certain conditions must be obeyed. The basis of the food must be cow's milk or its only available substitute, goat's milk. It must include all the elements necessary for nutrition including the vitamins and these should be present in approximately correct proportion. Owing to the elastic proportions of the contents of human milk and to the fact that it was impossible to produce a close imitation of human milk, the success obtained with artificial feeding must frequently be credited to the reserve digestive powers of the infant. There were two methods of calculation which served as useful tests on artificial feeding. The first was the percentage composition of the food and the second was that of caloric estimation. Excess of quantity in artificial feeding was much more deleterious than in breast feeding. In conclusion Dr. Turner discussed the calculation of calories and emphasized the necessity for accurate measurements of quantities. He described the methods of artificial feeding which he adopted.

SIR F. TRUBY KING (Wellington) also read a paper on infant feeding.

DR. JEFFREYS WOOD (Melbourne) in opening up the discussion thanked Dr. Jefferis Turner and Sir Truby King for their papers. He upheld the importance of human milk as a food. In dealing with the point of overfeeding in infants, he stated that this term was always a puzzle to him, for the baby would not take more than satisfied him. He emphasized the importance of not feeding too frequently. Holt from experiments was led to believe that a child of two months should have sixty cubic centimetres (two ounces) per feed, a child of four months one hundred and twenty cubic centimetres (four ounces), but on this amount they did not thrive well. The speaker had found from experience that a child of six days could take as much as one hundred and eighty cubic centimetres (six ounces). Often he found that constipation, poor sleep and fretfulness were due to underfeeding. His advice to parents of these children was to give large feeds. The baby was the best judge as to the amount to put in the bottle. In the early morning the child took more than later on in the day. His treatment in this case was to fill the bottle up with pure milk and to repeat it, if necessary. In some instances this treatment was not so good as full feeds on condensed milk.

DR. G. BRUTON SWEET (Auckland) agreed that the best way to feed the baby was with human milk, but if they were forced to feed artificially, the best available substitute was cow's milk. He advised those using the substitute, to keep an open mind. It should be remembered that they were dealing with a foreign substance and the only constituent in cow's milk identical with that in human milk was the milk sugar. He claimed that cane sugar was as good. In the question as to whether the baby should have a high protein or high fat diet, there were two schools. If there was a high quantity of both, trouble would ensue, but if either were kept low, better results followed. In warm climates his experience was that with high protein and low fat percentages babies did well. It was not a question of all babies having the same food. Nature varied her milk. Infant feeding was an art. If the baby was doing well, he did not believe in altering the food. He was opposed to high fat percentages in infant feeding and referred to Sir Truby King's method. He stated that he frequently was asked about the use of emulsion. He thought that the babies did well at first, but later suffered from diarrhœa and vomiting. In that way he did not quite agree with Dr. Jeffreys Wood; however, he agreed that starvation might cause diarrhœa and vomiting. His chief difficulty in infant feeding had been the fat percentage. Protein percentages were not so difficult to arrange, but excess of protein might cause indigestion. It was safer to give high protein, however, than a high fat percentage.

DR. JEAN MACNAMARA (Melbourne) mentioned the importance of the mother's diet in some cases of facial eczema.

In reply to a question concerning bacillary dysentery, SIR TRUBY KING said that he was of the opinion that this disease had become scarce in New Zealand because of the methods of infant feeding used. Dr. Macnamara had pointed out that if bacillary dysentery could be eradicated from Australia, infant mortality there would come down to the level of that in New Zealand.

SECTION X.—NAVAL AND MILITARY MEDICINE AND SURGERY.

Medical Organization in War.

COLONEL R. TRACY-INGLIS (Director of Medical Services, New Zealand Medical Forces) read a paper on medical organization in war. The army medical service in time of war was responsible for the preservation of the health of the troops, the professional treatment and care of the sick and wounded, the collection and evacuation of the sick and wounded from the theatre of operations and for the replenishment of medical and surgical equipments. Colonel Tracy-Inglis then described in detail the duties of director of medical services, of a deputy-director of medical services and of an assistant-director of medical services. The first mentioned officer was attached to general headquarters, the second to corps headquarters and the third to divisional headquarters. Colonel Tracey-Inglis described the activities of these officers and explained the manner in which the work of the medical services was coordinated by them. He then passed on to the duties of an assistant-director of medical services in relation to officers who were subordinate to him. He discussed regimental aid posts and described the duties which might be required from those attached to field ambulances. He finally dealt with casualty clearing stations, ambulance trains, inland water transport, ambulance units, general hospitals and convalescent depôts. He also referred briefly to hygiene and bacteriological laboratories, mobile X ray laboratories, medical stores and hospital ships. He concluded by saying that time and place might change the ways and means of caring for the sick and wounded in war time, but that the basic principles would remain the same.

LIEUTENANT-COLONEL A. R. D. CARBERY (Wellington) considered that the essential point neglected in New Zealand was the organization of the medical corps. He asked what would happen were they suddenly called upon to take the field as he knew of no scheme having been formulated. His opinion was that in the late war they mobilized too many medical troops and tried to maintain too many hospitals. He advocated the appointment of officers to the positions they would occupy in the event of war without loss of time.

Vincent's Angina.

SURGEON LIEUTENANT-COMMANDER W. E. J. PARADICE (Sydney) read a paper describing cases occurring among naval patients which were of interest from a bacteriological point of view. In the first place he dealt with infection of the tonsil by the organisms of Vincent's angina. Three types of infection were encountered. The first type yielded Vincent's spirochætes and fusiform bacilli in apparently pure culture. The second type was due to a mixed infection with Vincent's organisms predominating. The third type was of a mixed infection in which Vincent's

organisms were present in small numbers only. He had found that all three types yielded to applications of *liquor arsenicalis* and of a one in five thousand solution of perchloride of mercury. He also described gingivitis due to spirochætes of the Vincent type and fusiform bacilli. When *Bacillus maximus* was found in combination with Vincent's organisms, the lesion was extremely resistant to treatment. A form of balanitis was due to Vincent's spirochætes and fusiform bacilli together with innumerable other organisms. Among other cases reported were two of cystitis of unusual ætiology. In both the urine had contained organisms similar to *Staphylococcus albus*, but the organisms had been arranged in pairs and had been larger in diameter than normal. A subculture incubated for twenty-four hours had yielded organisms which were larger than typical *Staphylococcus albus*, but smaller than those obtained from the first culture. They had lost their diplococcal grouping and were typically staphylococcal. It was possible either than the *Staphylococcus albus* could assume an abnormal form when grown under what were apparently anaerobic conditions in the presence of urinary or other organic constituents, or that there was a particular variety of this coccus which behaved in the manner described under given circumstances.

COLONEL J. S. PURDY (Sydney) referred to an outbreak of tonsillitis on the S.S. *Shropshire*, a transport with the expeditionary force. The time honoured custom, dating from Nelson's day, of swabbing decks was carried out on this ship. Through his representations it was discontinued and the outbreak ceased apparently because of the decks being allowed to dry. Recently in reading Captain Cook's journal he had found that on the *Discovery* Captain Cook had noticed outbreaks of tonsillitis and had introduced the practice of lighting cauldrons to dry the decks after swabbing. Unlike Cook's recommendations regarding scurvy, the suggestion in regard to swabbing had not been adopted by the Admiralty.

LIEUTENANT-COLONEL A. R. D. CARBERY (Wellington) mentioned that a similar condition prevailed at Codford Camp until wet swabbing was abolished.

SECTION XI.—ORTHOPÆDICS.

Muscle Tone.

In his address as President of the Section of Orthopædics DR. N. D. ROYLE (Sydney) dealt with the definition and explanation of muscle tone. Starling's definition was inadequate since slack in the patellar tendon could be demonstrated. Moreover it could be shown that retraction did not take place in the normal muscle when at rest. If a muscle was cut while in a state of contraction or of tension (stretching) retraction occurred, but not otherwise. Holmes and Walshe inspired by the work of Sherrington described muscle tone as a proprioceptive reflex whose purpose was the maintenance of posture. The same authors and Stanley Cobb obviously had no clear conception in their mind since they held that all muscles were in a state of constant slight tension. After discussing Sherrington's work on tone in decerebrate animals, Dr. Royle turned his attention to the suggestion by de Boer and Langelaan that a change in the tonic condition of muscles resulted when the sympathetic nerve supply was divided. The latter held that the sympathetic nerves were concerned with plastic tone, the tone observed in animals deprived of their cerebrum, while the tone persisting after section of the sympathetic nerves was contractile tone. It was denied by the majority of observers that the sympathetic system had anything to do with muscle tone. Dr. Royle proceeded to examine the evidence gained from his own experiments of the part played by the sympathetic nerves in the maintenance of plastic or postural tone. This evidence had already been published in this journal. In the first place he dealt with normal animals on whom section of the sympathetic white rami had been carried out. In the second and third places he dealt with the spinal and the decerebrate animal. Fourthly he described briefly the effect of ramisection in the human subject and as a result of the evidence gathered, he came to the conclusion that the sympathetic nerves had a distinct and important influence on tone. Sherrington taught that tone appeared in muscles undergoing contraction or after contraction in the change of attitude. He found that the opposing muscles were toneless and relaxed. This held for decerebrate animals. Some persons could inhibit the contraction of muscles. Dr. Royle thought that there was evidence in favour of the contention that there was some cortical contribution to the maintenance of tone. He defined muscle tone as a proprioceptive reflex mechanism which was present to an appreciable degree only in muscles subjected to stretching as in the maintenance of posture or in muscles about to go into action in response to an idea of muscle. It was not present in resting muscle.

DR. D. S. WYLE (Palmerston North) thanked Dr. Royle for coming so far to speak to them. As he had asked for some discussion especially in regard to muscle tone in fractures and tendon transplantations, a short talk followed.

PROFESSOR J. MALCOLM (Dunedin) asked Dr. Royle if he could throw any new light on the histological basis of muscle tone.

In reply Dr. Royle said that he did not know.

MR. J. RENFREW WHITE (Dunedin) said that he had never seen a patient with congenital spastic paralysis in whom there was not some degree of voluntary control. Dr. Royle said that this was what led him in the first place to begin his investigations on the subject. It could not be explained by reciprocal innervation, but only by sympathetic control.

MR. HAMILTON RUSSELL (Melbourne) said that he thought that they did a great deal of harm by putting excessive weights on fractures; he considered that a very light weight was sufficient.

DR. ROYLE did not agree with this, but considered that a fracture should be reduced without difficulty under anæsthesia and a light plaster exoskeleton applied while there was no muscular spasm.

DR. L. WILL (Christchurch) thought that extension in fractures at once produced muscle tone and favoured the three-stage plaster method to avoid this.

Dr. Royle agreed with these remarks.

Visceroptosis.

DR. J. RENFREW WHITE (Dunedin) explained that he had carried out examinations of many hundreds of young persons in order to obtain information concerning the mechanism of the body. He had been drawn to the conclusion that much chronic ill-health, disability and disease were due to the gradual development of processes resulting from habits of faulty posture. He held that visceroptosis was due to congenital looseness of attachment of the abdominal viscera and to life-long habits of defective body use. Natural postures were active and passive. The former was assumed during effort and was characterized by a straightening out of the spinal curves, a throwing back of the head, a slight protrusion of the upper part of the abdomen and an elevation of the chest. Passive posture occurred after effort. The spinal curves became more evident, the head drooped forward, the chest descended and the lower part of the abdomen tended to become prominent.

Among primary school girls he found 11% with perfect postural relations, 54% with slight postural defects and 35% with high degrees of postural defects. Among high school girls 10% had perfect posture, 40% slight postural defects and 50% high degrees of defects. Among girls between the ages of eighteen and twenty-one years 6% had perfect posture, 39% slight defective posture and 58% very defective posture. As a result of his observations he concluded that visceroptosis was not wholly an abdominal condition. It was a result of general anatomical disorder. He recommended orthopædic measures both for prevention and for treatment. The individual should be made to realize his mechanical defects and should be informed of the correct position he should attain. He should learn the best and easiest method of attaining and maintaining this position. Muscles should be trained to increase in strength and tone, so that they could maintain the desired tone.

DR. H. S. NEWLAND (Adelaide) thanked the speaker for having put a subject before them in a new light. He said

that he thought the postural treatment for visceroptosis should begin in babyhood and be continued during the growing period of life if it was to be of much use.

DR. R. HAMILTON RUSSELL (Melbourne) said that after many years of surgical experience he had come to the conclusion that the surgical treatment of visceroptosis was valueless, if not criminal. Mr. White's remarks had made the subject so clear that he felt the postural treatment was undoubtedly the correct one.

DR. J. A. POTTINGER (Invercargill) thought that the whole trend of modern life was helping to produce this condition and he failed to see with the use of the present-day school furniture and the like how they could rectify the faulty posture by a system of exercise. He thought that the only remedy was to return to a primitive condition.

DR. C. A. WILL (Christchurch) pointed out that most of Mr. White's patients were children who had been educated at the old type of school. There was, however, in New Zealand a society which had originated in Canterbury and which was known as the Fresh Air Schools Society, where the children were in open-air class rooms and were encouraged to exercise. He felt that if this system were carried out throughout the country, it would make for the production of a race belonging to class A.

DR. N. D. ROYLE (Sydney) agreed that this was a question for the orthopædic surgeon.

Mr. White replied by pointing out that the treatment which these patients needed, was not a system of exercises, but a reeducation of their postural centres and a training in sensation. He then outlined the process by which a child could be taught habitually to stand correctly. He said that even in middle life he was able to obtain a fair degree of correction of visceroptosis by this method.

He paid a tribute to Dr. Joel Goldswath, of Boston, who had spent his life at this work and from whom the speaker had first obtained the stimulus to make these investigations and to regard the body as one mechanical whole.

SECTION XII.—RADIOLOGY.

The Development of Radiology.

DR. STANLEY S. ARGYLE (Melbourne) read a paper on progress in radiology. He said that thirty-one years had elapsed since Röntgen announced his epoch-making discovery. Dr. Argyle had been engaged in radiological practice for twenty-two years and he thought that it might be desirable to review his experiences and the progress that had been made. He described the early forms of apparatus and referred to the gradual development of the use of X rays in treatment. He also described the effects of X rays on the early workers in this field. The first fact to be recognized was that the effects of overdosage were delayed in their appearance. It was then seen that intensity of radiation and distance from the source of the rays had to be taken into consideration in arriving at a diagnosis. He then described the Crookes tubes and the difficulty attached to their use. He showed how attempts were made to overcome the varying state of the vacuum, the perforation of the anode and the overheating of the tubes. The Coolidge tube had ultimately solved many of the difficulties. Dr. Argyle then described the progress that had been made in photographic plates and the designing of suitable equipment for the consulting room. Passing on to the discovery that salts of bismuth could be used for purposes of diagnosis with X rays, he pointed out how incredulity and scepticism had been overcome and how the method had become indispensible to modern clinical investigation. In conclusion he made reference to the advances that had been brought about by the war both in regard to scientific improvements and as far as British manufacture of apparatus was concerned.

Kümmel's Disease.

DR. W. R. STOWE (Palmerston North) read a paper on Kümmel's disease. He began by describing two cases by which his attention had been drawn to the condition and said that the literature on the subject was comparatively scanty. Kümmel in his original statement in 1895 had described the condition as a post-traumatic deformity. The essential predisposing cause was trauma, direct and indirect. There was a stage of initial injury with varying degrees of surgical shock. The second stage was one of well-being in which the patient carried on his occupation. The third stage made its appearance weeks, months or even a year later and was characterized by angular kyphosis and recurrence of pain. The pain was local, situated over the spine and radiating down the extremities. It was of a neuralgic character and often very severe. The condition had first been actually described by Verneuil, of Paris, in 1892. In a case reported in 1896, however, he had attributed the pain to rheumatism. Up to 1921 eighty-four cases had been reported. In none of the case reports had X ray examination been mentioned. Dr. Stowe held that all victims of accidents similar to those described in connexion with this disease should be kept under observation and examined by a radiologist at intervals, until the presence of a post-traumatic change in the vertebral bodies could be excluded. Dr. Stowe discussed the pathogenesis of the condition. He said that the immediate result of the injury would be either impaction of the trabeculæ or disruption by a tearing action. In either case hæmorrhage more or less minute would occur. Ludoff had concluded that nutrition was impaired and necrosis of the spongiotrabeculæ supervened, resulting in collapse of the vertebral body.

Diabetes Insipidus.

Dr. Stowe also reported a case of *diabetes insipidus* associated with defects in the skull. The patient was a half-caste Maori boy and skiagraphic examination of his skull had revealed multiple deficiencies of a punched out circular character in nearly all parts. The clinical picture had been that of *diabetes insipidus* with exophthalmos. The condition had been diagnosed as one of dyspituitarism. Dr. Stowe quoted records from the literature of somewhat similar cases and said that the condition bore the impress of a disease rather than that of a purely developmental anomaly. This assumption was justified on the grounds that *diabetes insipidus* was sometimes associated with meningeal gumma and that it was hereditary in some families. He quoted from the literature reports which were *à propos* of the skull defects. He concluded by saying that the skull should be examined by X rays in all cases of *diabetes insipidus* in children.

Bockhart's Impetigo.

Dr. Stowe also reported the treatment of Bockhart's impetigo in an adult by X rays. This condition occurred fairly frequently in children, but he had been able to find no record of its occurrence in an adult. The patient was a woman, aged forty years, who had been infected for eight years. Dr. Stowe had applied ultraviolet rays to the affected areas. The vesicles had temporarily disappeared. A full epilation dose of X rays had then been given to two areas and the hair had fallen out. Ultraviolet rays had been applied in order to keep the surface of the skin free from bacteria. The new hair had grown up and then the rest of the scalp had been epilated. The result had been entirely satisfactory. The hair was growing vigorously and there was no sign of disease.

DR. S. S. ARGYLE (Melbourne) stated that he had seen one of two similar patients with osteoporosis in whom mental symptoms had been definite. Although there had been no polyuria, it was probably luetic in origin. With regard to the spinal case of spondylitis, in his experience this was fairly common without a history of trauma.

DR. NEIL GUTHRIE (Christchurch) stated that he had seen a case of *spondylitis deformans* both bilateral and localized. At *post mortem* examination a chronic tuberculous abscess had been found involving the intervertebral disc with no collapse of the body of the vertebra and there was an abscess in each buttock.

Radiological Problems.

He showed a male patient aged forty-three years, who had had a subcutaneous tumour below the left clavicle, a lympho-sarcoma. Similar tumours had appeared from

time to time, but had been dispersed by X ray treatment. He produced skiagram revealing metastases in the fibula, femur and skull. These were treated with 130 kilovolt and four millimetre skin dose. The sacro-iliac region had been involved and had been treated with 200 kilovolt deep therapy. The patient had become perfectly well and was carrying on his occupation.

He showed two patients with tuberculous lesions beginning in interarticular facets and a skiagram of a fœtus *in utero* which was supposed to be that of a four months' pregnancy.

DR. W. R. STOWE (Palmerston North) asked for an opinion on a skiagram which he had reported on as a calcified hydatid cyst of the spine involving the body of the first lumbar vertebra. This report was confirmed by those present as being the most likely diagnosis.

MONDAY MORNING, FEBRUARY 7, 1927.

COMBINED MEETING.—SECTION I. AND V.

Diet.

DR. PETER H. BUCK (Dunedin) opened the discussion on diet. He gave an account of the traditional discovery of New Zealand by the Maori tribe and traced the transition from food gathering to food culture. The introduction of the *kumara* (sweet potato), taro, yam and gourd dated back to about 1350. Meat foods were scarce and were utilized without any waste. Anthropophogy was common, but the eating of human flesh was reserved for males. Fish was the staple food of the Maori. Birds were eaten. Green vegetables were scarce, but roots, rhizomes, herbs and seaweeds were eaten. Fruits and berries were not plentiful. In the coastal regions fish, shellfish and seaweed were eaten. Much was eaten raw, but when shellfish was cooked, the cooking was light. The eel was much prized. Barter took place between the inland and coastal tribes. The cooking was accomplished by heating stones in an earth oven, moistening the stones with water and placing the food in a definite order on this. The whole was then moistened and covered with a plaited mat and sealed with a covering of earth. At times a sort of casserole cooking was carried out. Two meals a day were taken. The nature of the root food necessitated much chewing. Stream, spring or river water was the only beverage. The diet produced a race of magnificent physique. The Maori was tall and his lower limbs were extraordinarily muscular. He possessed physical energy and endurance and excelled in athletic exercises. He was a hunter, fisherman and agriculturist. He made his own implements. He was constantly in physical training, ready for labour and for war.

DR. R. W. CILENTO (Rabaul) read a paper on the diet and nutrition of the northern Melanesian people. He pointed out that the decline of population in the northern parts of Melanesia was due to epidemics, altered socialogical conditions and psychological factors. In addition to these factors the diet of the native was incorrect and unsatisfactory. The native adult required approximately 3,000 calories daily, made up of one hundred and fifty grammes of protein, five hundred grammes of carbohydrate and fifty grammes of fat in addition to mineral salts and accessory food factors. The diet of the healthy male consisted largely and of growing children entirely of carbohydrate. Roots and tubers were eaten. They comprised about 15% of irritating fibres and had a low nutritive value. The diet was very deficient in animal protein. The carbohydrate eater was incapable of hard work. He lacked initiative and energy. The second serious deficiency was of fat. Dr. Cilento showed that a race fed on a diet deficient in these respects was highly prone to tuberculosis. Then these respects was highly prone to tuberculosis. The native diet in New Guinea consisted of *taro*, banana, sweet potato, crude sago, tapioca and yam, edible leaves, white flesh fish, fowls, opossums, snakes and pigs. Many of these articles were scarce and were regarded as delicacies. Fats were obtained from cocoanut and native almonds. *Taro* formed the staple food. It contained 1·29 grammes of protein, 33·51 grammes of carbohydrate, 0·39 grammes of fat per hundred grammes; when peeled the protein and fat content was still lower. It contained very little vitamin *A*, an appreciable quantity of vitamin *B* and no vitamin *C*. Dr. Cilento expressed the opinion that this incorrect diet was largely responsible for the fact that tuberculosis and pneumonia caused half the deaths and bowel infections one-quarter.

DR. F. L. APPERLEY and MISS K. SEMMENS (Melbourne) communicated a preliminary report on their investigations into the correlation between gastric fuction and the bicarbonate content of the plasma. They determined the hydrogen ion concentration of the blood during fasting and the bicarbonate and chloride content of twenty-six individuals with gastric symptoms. No relationship was detected with the results of the fractional test meal. The second group comprised twenty-seven healthy individuals. Difficulty was experienced in the endeavour to bring all the samples of blood under exactly comparable conditions. This was overcome by treating the samples of blood with a mixture of oxygen and carbon dioxide of uniform composition at a fixed temperature. It was found that the plasma bicarbonate varied with the chloride of the gastric contents up to seventy-five minutes. Later some other factors appeared that destroyed the relationship. They found that the acidity of the gastric contents could be calculated by dividing the total hydrochloric acid by the gastric volume, while the sodium chloride in the stomach could be calculated by dividing the volume of regurgitated duodenal fluids by the gastric volume. Diminution of the gastric volume was the only factor that raised both the acidity and sodium chloride content and therefore the total sodium chloride content of the stomach. High acidity and high total chloride in the test meal corresponded with hypertonicity of the stomach. A third group of persons convalescent from affections of organs other than the stomach, who had undergone surgical treatment, was next selected. The relationship between the chlorides of the blood and plasma and the chlorides of the test meal was not very clearly defined. The bicarbonate content of the plasma was found to be low in persons with ptosis of the stomach and hypotonus. A fourth group of individuals was also selected. The equilibration of the samples was carried out at 38° C., but no relationship between the blood chemistry and gastric function could be established under these conditions. The authors suggest that their results if amplified and confirmed would explain the effects of empirical treatment and open up a large field for treatment.

PROFESSOR H. P. PICKERILL (Dunedin) spoke of diet as a cause of sepsis in the alimentary canal. He pointed out that all carbohydrates were not equally fermentable by mouth bacteria. The articles of diet that were the most highly prepared, cooked, refined and ground, produced the most acid, while those articles which were in a more natural state produced little if any acid. Defective resistance to acid of dental enamel led to breaches of the surface layers and to the entrance of septic organisms to the dentine, pulp, and jaws. The alkalinity index of saliva was used as a measure of the power to neutralize lactic acid and to wash away *débris*. He referred to experiments to prove that gastric secretion was diminished by the elimination of taste. Sapid foodstuffs, including articles in common use, yielded no gastric secretion. Further experiment revealed that gastric secretion was stimulated by acids and inhibited by alkalis. The same obtained in regard to pancreatitic secretion and to bile. By feeding with non-stimulating diet to rabbits, the animal died within six months if the diet was begun early enough; if started later development was greatly reduced, starches and calcium were excreted in excess in the fæces, the salivary glands did not develope in normal ratio to the rest of the body and gastric lesions were found after death. Professor Pickerill had found that diminution of taste perception by painting the tongue with cocaine had the effect of diminishing the quantity and the alkalinity of the saliva in the human subject. This appeared to be associated with septic teeth. Psychic influences often suppressed the salivary flow, while strong muscular exertion at first increased it, but later led to dryness of the mouth. Increased mental excitement and subnormal muscular exercise, two concomitants of higher civilization, tended to a decreased salivary secretion and thus to oral sepsis. Fur on the tongue was a salivary deposit. The saliva after irritation

by excess of alcohol, tobacco or sugar became scanty and viscid and this was deposited on the tongue. Professor Pickerill held that diminished stimulation of the glosso-pharyngeal chorda-vagus reflexes was followed by diminution of the salivary, gastric and pancreatic secretions. This meant stasis which increased the proliferation of bacteria and the production of toxins.

DR. S. A. MOORE (Dunedin) pleaded in his paper for what he termed the optimum tonic diet. His thesis was that modern medicine was built upon a mystical belief in the power of the infinitely small. A sufficient diet contained in addition to protein, fat and carbohydrate mineral salts and vitamins. Although vitamins had not been isolated and studied directly, it was necessary to make use of the knowledge already gathered. Recent discovery of vitamins *D* and *E* indicated that there were other deficiency diseases beside those recognized. It was necessary in every country for the government to take measures to prevent common foods from being deprived of their mineral salts and vitamins. Dr. Moore stated that many mild functional disturbances were actually mild forms of deficiency diseases. After full consideration of the problem and extended experience he had constructed a diet at first for persons with attacks of diarrhœa. It consisted of kaolin and bran, vegetable *purées*, selected fruits, whole wheat meal bread, fish and eggs. He claimed that this diet did not produce distension and was readily taken. He protested against the habitual use of a diet of white bread in hospitals. Roughage was essential as were vitamins. Ordinary diets were denatured, flavourless and constipating. He called attention to a certain town where dietetic rules for the prevention of dental caries had been formulated, but these rules were ignored in the hospitals and nursing homes. As differences of opinion existed on this matter, he maintained that investigations should be conducted to settle these differences. He suggested that the public would understand better if the term food tonics were substituted for vitamins and mineral salts.

DR. T. RUSSELL RITCHIE (Samoa) dealt with the diet of the Samoans. Like the Maoris, the Samoans belonged to the Polynesians, a race of fine physique. They were said to be lazy, but the native worked hard in his ordinary village life. He would not work for the white man, unless compelled. His food supply was ample. The chief article of diet was fish and occasionally he ate meat. Within recent years tinned and corned meats, polished rice, biscuits and white flour were being imported and the native was using these articles to vary the monotony of his natural diet. It would be interesting to watch the effect of this on the next generation of Samoans. Dr. Ritchie ascribed the deterioration of the physique of the Samoan to hookworm disease which had increased until hookworm control had been undertaken.

DR. ELIZABETH GUNN (Wanganui) gave an account of the health camps which she had instituted in the district of Wanganui for children suffering from malnutrition. She had held six camps and had had five hundred and fifty children in camp for periods varying between four and a half and five and a half weeks. Every child had improved in weight and general health. She used an excess of calories, a diet comprising milk, butter, meat and vegetables. She held the opinion that little work was being done to combat the less spectacular disorders, many of which were productive of disablement, discontent and inefficiency. It was not a matter of feeding poor children. Malnutrition attacked the rich as well, because they lived on expensive, highly manufactured food. The children under her care were given four parts of coarse oatmeal and one part of bran with a mug of milk, but no sugar for breakfast. A few raisins, a banana, some prunes or dates were added. At first the children might refuse to eat the porridge, but they soon took it willingly. The children got up at half past six (half past five by ordinary time) and were given a cup of cocoa. They went to bed at half past seven (camp time) and slept well through the night. They had frequent meals. She had been very satisfied with the result of the camp experiment.

DR. S. A. MOORE (Dunedin) asked what was the condition of the teeth in New Guinea. He also wished to known whether it was a fact that vomiting was common in hypotonicity.

DR. W. B. MERCER (Wellington) asked whether there were any specific stimulants to the glosso-pharyngeal nerve. Could a cocktail be included in this category?

DR. HARVEY SUTTON (Sydney) said that the great problem in social life was the industrialization of the population, the result of the growth of urban communities whose diet was almost entirely imported and sophisticated. Fresh food, fruit, vegetables and especially milk were consumed in small amount, milk being consumed to the extent only of 0·28 litre (half a pint) a head per day. Sapid food did not seem of such importance in the diet of children and excessive acids as in citrus districts appeared most destructive to teeth. The aborigines, who had excellent food, had a non-sapid diet, but their children who lived on the white man's diet in government settlements had rotten teeth.

He believed that the most important phase of prevention was the creation of resistant enamel which was the most important need and was decided in the first two years of life by an adequate vitamin diet.

Dyspepsia as McCarrison had demonstrated, was the regular prodromal association of deficiency in vitamin and the sympathetic stimulation of sunlight. Fresh air and exercise were necessary. He considered that milk was the best protective food yet devised to meet modrn difficulties in diet.

DR. MARY DE GARIS (Geelong) held that caries was due to faulty diet and to local infection. She maintained that the proper treatment was the removal of the tooth. Filling merely concealed the sepsis. A filled tooth was a foreign body and should not be tolerated.

DR. BUCK spoke in reply about the introduction of the *kumara* into New Zealand.

DR. PICKERILL stated that he had found that a moderate dose of alcohol had a beneficial effect on salivary and gastric secretion. In answer to Dr. Harvey Sutton he stated that the error in the case of the children quoted lay in their consumption of vast quantities of oranges and peaches; small quantities produced physiological stimulation, large quantities exhaustion of salivary secretion. He agreed that the building up of the teeth was the most important factor. He had been struck in his researches by the resistance of Maori teeth. In the Dunedin Dental Hospital no student was allowed to fill a root canal until two bacteriological tests had been carried out and no bacteria had been grown.

DR. RITCHIE gave two reasons why milk was not used in Samoa. Firstly the average temperature was 29° C. (84° F.), there being few degrees' variation between summer and winter; secondly though Samoans had solved some problems, they were still primitive in other respects. They would not go to the trouble of keeping down the bacteriological content of milk, hence to advocate milk for consumption in Samoa was to court danger.

SECTION II.—SURGERY.

Gastric and Duodenal Surgery.

MR. H. B. DEVINE (Melbourne) read a paper on the status of gastro-enterostomy in gastric surgery. The first successes of the operation had been epoch making and then it was gradually regarded as a panacea for every gastric ill. Opinions in regard to the operation, however, were not unanimous. On the one hand many English surgeons had clung tenaciously to the operation and on the other Finsterer had recently voiced the opinion of many continental surgeons that the results of routine gastro-enterostomy for gastric and duodenal ulcer were not satisfactory. Mr. Devine's opinion in regard to the sanguine view of gastro-enterostomy results was that what the surgeon often regarded as a perfect cure and a great success, was often looked upon by the patient as a miserable failure. The symptoms following the operation were often worse than those of the original ulcer. At the Mayo Clinic the operation was becoming relegated to its true sphere, that of a secondary operation. The curative action of gastro-enterostomy depended almost entirely in his experience on its effect on the emptying time of the stomach and to a lesser extent on an increase of alkaline

regurgitation. The emptying time would depend on what Alvarez called the "gradient" of the stomach and possibly on the distance of the stoma from the pylorus. He had found that the further away the stoma was from the pylorus and from the prepyloric mechanism, the quicker was the emptying time. In the application of gastro-enterostomy for the cure of ulcer two fundamental considerations had to be taken into account. One was the abnormal physiological and pathological conditions which had produced the ulcer and the other was the gross degenerate tissue changes brought about by prolonged secondary infection in the chronic callosed ulcer.

Mr. Devine then discussed unsuccessful gastro-enterostomy operations, performed by competent surgeons. These fell naturally into two groups, ulcer formation and gastric motility errors. It was difficult to assign causes for all the failures, but he thought that a motility error was really the basis of all unsuccessful results, even in the ulcer formation group. Mr. Devine then gave examples of unsuccessful results by quoting the histories of patients. At the end of his paper he demonstrated with the aid of cinematograph films the successful technique of gastro-enterostomy.

DR. ST. J. W. DANSEY (Sydney) read a paper on acute perforation of gastric and duodenal ulcers. He based his remarks largely on the results obtained in the treatment of these conditions at the Royal Prince Alfred Hospital, Sydney, during the ten year period, 1915 to 1925. He said that contrary to the statement found in most textbooks these ulcers were more common in men than in women. The majority of perforations were on the anterior surface of the stomach and duodenum. He suggested that the more frequent anterior position of the ulcer in man might be the reason why acute perforation of the ulcer was more common in the male than in the female. The average age for perforation of gastric ulcer, forty-one years, was much the same for duodenal ulcer, 40·9 years. There was a stage when the ulcer had eroded down to the peritoneum and it required only a slight rise of internal pressure to bring about rupture. This might be caused by the intake of food. Even the outpouring of gastric juice in anticipation of a meal might cause rupture. Physical exertion was often the exciting cause. The rhythmic muscular contractions of the stomach might produce sufficient pressure to cause rupture, as when rupture occurred during sleep. In the one hundred and forty-nine cases reviewed by him the first symptom had been severe agonizing pain in the upper part of the abdomen. Vomiting in the early stage was uncommon, the breathing was shallow, the skin was bathed in cold sweat, but the pulse was about sixty per minute and the blood pressure was not lowered. Dr. Dansey discussed the mortality rates during the period under review and said that the improvement during the last five years was due to the reduction of time before the abdomen was opened. On no account should the surgeon wait for the shock to pass off before undertaking operation. Dr. Dansey then described the method of performing the operation for perforating ulcer. In all cases a double perforation should be sought. This had occurred in two of the series, the second perforation had been found at autopsy. It was of no account if the infolding of the ulcer obscured the lumen, for he held that posterior gastro-enterostomy should always be performed, unless the condition of the patient was so desperate that this could not be done. He recognized that this view might be open to discussion, but he believed that the risk to the patient by performing a gastro-enterostomy was not increased in most cases. Moreover gastro-jejunostomy should be accepted as an essential step in bringing about cure of the ulcer and leakage was much less likely to occur when a gastro-jejunostomy had been performed. In conclusion Dr. Dansey said that decreased mortality in the future would depend upon early recognition and on increased facilities for operating.

MR. H. S. NEWLAND (Adelaide) congratulated both speakers on their interesting papers. The idea of making the discussion a surgical pillory was a very interesting one and he thought that it was a good idea to record unsuccessful cases. He recited his own. In the first place there were those conditions in which there was no ulcer at all. This was a fatal error. The symptoms might be aggravated after the operation. He had been guilty of this once twenty years before, but only once. He had had to undo the gastro-enterostomy as the symptoms were progressing. If necessary he opened the stomach to find the ulcer in difficult cases.

There was a case of pyloric occlusion by a silk suture. This patient had progressed well for a few months, but had come back for further treatment. There was an annular stricture at the pylorus. The condition had been treated by pylorectomy.

After gastro-enterostomy had been performed for a perforated duodenal ulcer, pain had recurred but to the left. A jejunal ulcer had not been found by X ray examination. Another surgeon had undone the gastro-enterostomy and had carried out a gastro-duodenostomy; but the symptoms persisted. He had operated and found that there was a recurrence of the duodenal ulcer. Where there was hæmorrhage from the ulcer in addition to gastro-enterostomy the ulcer should also be attacked.

SIR DONALD MCGAVIN (Dunedin) added his tribute to the extraordinarily interesting and stimulating papers. One point had not been sufficiently emphasized; it was usually held that gastro-jejunal ulcer occurred in 2% of patients subjected to gastro-jejunostomy. In Devine's series the frequency was 4%. This ulcer was usually said to appear within two years. The operation of gastro-jejunostomy had been performed one hundred and ninety-two times at the Mount Sinai Hospital, New York, in nine years for duodenal or pyloric ulcers. The patients had been most thoroughly followed up. All the patients had been seen by three surgeons attached to the hospital. Of these, 34% developed gastro-jejunal ulcer, 18% of these were confirmed by operation and 16% by clinical and X ray examination. If these figures were approximately correct, it followed that gastrectomy was the better operation for gastric and duodenal ulcers. The operative mortality of duodenal ulcer was high. In this series Pagenstecker's thread had been used for the outer row of sutures. When the pylorus was occluded, duodenal ulcers did not appear in a greater proportion than when the pylorus was left untouched. After a posterior gastro-enterostomy had been done, gastro-jejunal ulcers appeared more than five years after operation.

After gastro-jejunostomy the patient should be kept well alkalinized, perhaps for years; he should be put on a diet which did not contain acid.

DR. T. D. M. STOUT (Wellington) said that the first problem was that of accurate diagnosis. He held that duodenal ulcer was diagnosed too often. Symptoms typical of duodenal ulceration could be caused by pathological conditions elsewhere in the abdomen. He held that the symptoms in ulcer were severe and that the pain was as a rule distressing. He did not think that X ray diagnosis of duodenal ulcer could be said to be absolutely reliable. The X ray diagnosis of gastric ulcer was on a more sure, but not yet certain footing. He thought that the ulcer should be demonstrated at the time of operation. He did not hesitate to open the stomach if the signs were not quite definite. It was his routine in duodenal ulcer to perform gastro-jejunostomy and to leave the ulcer alone. He raised the question as to whether it was necessary to treat the ulcer. Theoretically it was correct to do so, but there was an added danger to the patient because the tissue of the duodenum was not the healthiest to manipulate. In gastro-jejunostomy they had a safe and tried procedure and they might be pardoned for refusing to dispense with it without mature consideration. In regard to gastric ulcer he believed that radical measures were indicated. Local excision by itself was unsatisfactory and a gastro-jejunostomy had to be combined with it, before they could be at all confident of their results. He advocated the use of the Pólya operation as modified by Moynihan. He considered that they could discard local excision, some resections and especially operations aiming at reconstruction of the gastro-duodenal channel. Finally he discussed the question of operating in cases of hæmorrhage from an ulcer. Lives might be saved if operation were undertaken soon after hæmorrhage had occurred.

DR. P. STANLEY FOSTER (Christchurch) said that his remarks might savour of reiteration. He had gone into

the case records of the Christchurch Hospital from 1919 to 1925. In that time there had been thirty patients with perforated ulcers, nineteen with gastric and eleven with duodenal, with ten deaths. This list included three patients who had been moribund on admission and for whom nothing could be done. There was also a child one month old in whom the condition was found *post mortem*. If these patients were excluded the mortality rate is less than 25%. This compared favourably with the statistics of the series given in Choyce's "System of Surgery."

In the majority the patients were between the ages of forty and sixty; the oldest was seventy-eight and he recovered, the youngest was one month of age. Many of the patients were operated on within ten hours of the onset of symptoms, three were operated on after the lapse of twenty-four hours and all died; one who was operated on after twenty hours, recovered. In the majority drainage was employed and the ulcer oversewn. In some the appendix had been attacked first. In five gastro-enterostomy had been performed at the time of the original operation, with one death.

In regard to the after results of gastro-enterostomy, twenty-five patients had been traced; twenty had reported that they were quite well; in two there had been no improvement. In one diabetes had developed six months afterwards; the patient was still under treatment, the stomach condition was apparently good. Two had some discomfort occasionally.

Thirty-eight of the patients with gastric ulcers had been operated on with two deaths. The ages were between thirty and sixty, but many were between fifty and sixty, males predominated in the ratio of three to one. Symptoms had lasted over a period of years. Pain had been constant and vomiting frequent. Hæmatemesis had occurred in 10%. In a considerable proportion the symptoms had been atypical. One patient belched a gas apparently of the methane series which was inflammable. He could blow through a glass tube and light the gas coming through the end. He had discovered this phenomenon while lighting his pipe, when he had burned his whiskers. Dr. L. E. Barnett confirmed the statement.

X ray investigations had revealed the ulcer in twenty-five out of twenty-eight patients examined. The treatment had been by operation. Gastro-enterostomy with or without excision of the ulcer had been carried out in thirty patients, with one death due to gangrene of the lungs. Gastrectomy had been performed for six patients with one death from shock. Sleeve resection had been performed twice.

Of twenty-six patients with duodenal ulcer the age of the majority was between forty and sixty; there were twenty males and six females. Every patient suffered from a sort of dyspepsia. Of the typical duodenal type there were eleven cases. Hæmatemesis appeared in three patients, three ulcers had previously perforated.

Gastro-enterostomy had been performed on twenty-four patients without any deaths. One patient with repeated bleeding had a very large ulcer eating into the pancreas. This patient had collapsed on the table and had died subsequently. He had had repeated transfusions previously. In one case the ulcer had been oversewn and appendicectomy done, but no anastomosis. This patient had reported that no improvement had resulted.

One patient discharged from a medical ward "cured" had returned the same night with a perforated ulcer. He had recovered.

Dr. Foster did not think that they had as many cases of jejunal ulcer as appear in the New York series. He did not believe that gastrectomy was a logical procedure in all cases of gastric ulcer.

PROFESSOR F. GORDON BELL (Dunedin) wished to make one or two constructive points. In the great majority of cases of duodenal ulcer a gastro-jejunostomy should be done. In suitable small early ulcers of the duodenal occasionally it was possible to excise the ulcer. The patients should receive careful alkali treatment afterwards. The idea was to get rid of the ulcer and put the patient under medical treatment. In gastric ulcer the surgeon should adopt an intermediate position. Gastro-jejunostomy was the procedure for the simpler uncomplicated ulcer, as the punishment far exceeded the crime if an extensive partial gastrectomy was performed. Partial gastrectomy was indicated in the large, callous, indurated ulcers. Although gastro-jejunostomy was an essentially satisfactory procedure, yielding a cure in two-thirds of the patients, it was unsatisfactory in 25%. This percentage could be reduced with careful after treatment. It was common to find that at the time of leaving hospital patients were told they could eat anything, but their diet should be selected and alkalis given. He gave his patients a copy of directions as to their future mode of life. In Mr. Devine's most fascinating opening address the defects with which he had dealt, were to a large extent cardinal ones, emphasized by the high priests of gastro-jejunostomy. They were the long loop, the kink and the stoma which was placed too near the pylorus. If these points were attended to, there would be fewer unsatisfactory results. He had recently operated on two patients with gastro-jejunal ulcer in hospital. In one there was a perforation after a partial gastrectomy and in the other a perforation after a gastro-jejunostomy performed twenty years previously. The latter patient had had relief for thirteen years and had then got a recurrence of the symptoms of the duodenal ulcer. There must be some local factor which influenced the large incidence of gastro-jejunal ulcer quoted by continental surgeons and probably the smaller Anglo-Saxon estimate was nearer the mark. Probably this could be reduced by more careful after treatment. Lastly as regards perforation, it was most important and as a teacher he wanted to say particularly that gastro-jejunostomy must not be added to the initial treatment. If this principle were to extend in Australia and in New Zealand, as many of these patients had perforce to be dealt with by comparatively inexperienced surgeons, more patients would be lost than if the ulcers were merely sutured.

SIR GEORGE SYME (Melbourne) said that it seemed presumptuous for him, retired from practice, to discuss work in which men were actively engaged. The advantages were that he had had a longer experience of the effects of these operations. Recently he had been asked to see a patient on whom he had operated for pyloric ulcer twenty years previously. After gastro-jejunostomy the patient had recovered and had remained in perfect health until later a recurrence of symptoms had appeared. He had seen a great many patients with conditions of the same kind. He was sceptical as to whether a gastro-jejunostomy cured an ulcer. He would like to endorse most emphatically the necessity for after treatment of these patients. Such a patient could not eat or do anything he liked. He was afraid that like Devine he had had to undo the gastro-jejunostomy many times. When Professor Senn had visited Australia, he had asked the speaker if he had performed gastro-enterostomy on many occasions. He had said that he was afraid that the operation was going to be greatly overdone. It was so easy that anybody could do it. It was apparently simple, but not so simple as the average operator thought, unless every effort was made to select the site and to adopt the proper procedure.

There was something that they had not discovered with regard to the causation of these ulcers. Gastro-jejunostomy at the time of the first operation was absolutely wrong. If they wanted to carry out a successful gastro-enterostomy, the patient must be thoroughly examined before the operation was performed.

DR. A. M. BIGGS (Balclutha) wished to remind the members of Hurst's work in which he had shown that a duodenal ulcer was associated with a hypertonic stomach and a gastric ulcer with a hypotonic stomach.

DR. L. E. BARNETT (Dunedin) had been practising gastro-enterostomy since the days when Murphy's button was used. He had watched the development and had changed his methods from time to time. He pointed out that the stomach and duodenum as seen in a diagram were different from what they were in the body. The stomach varied in size and position and when it was turned back after a gastro-enterostomy, it often became twisted and kinked.

He had given up the no-loop operation, because he believed that a certain amount of play was necessary to allow of the up and down movements of the stomach. Some inflammatory swelling had followed in a few patients around the opening of the mesocolon due he thought to contamination at the time of anastomosis. A suction tube would prevent this. He had had to perform lateral anatomosis between the afferent and efferent loops to save the patient's life. A gastro-enterostomy must leave the patient better, but he had an abnormality and was not as good as before. Mr. Devine had mentioned that he removed the appendix through a stab incision in certain patients. Dr. Barnet had tried this years ago and had given it up. He believed that a paramedian incision could be made from the enciform cartilage to the *symphysis pubis* and the patient's abdomen would be as good as before operation.

Dr. Carrick Robertson (Auckland) wished to take the opportunity of thanking Mr. Devine for finding pigeon holes and classifying results after gastro-jejunostomy. He quoted an interesting case of a man with a bad duodenal ulcer which had perforated before. He had recovered from this. He was a sheep farmer and on account of symptoms had to give up his occupation and live in town. He used to haunt Mr. Robertson to tell him of his troubles until he became a positive nuisance. Eventually he left Auckland and resumed sheep farming. A year or so later he turned up again, cured of all his previous trouble. This was a case of neurasthenia induced by the necessity of having to give up his previous occupation. Another patient on whom he had operated, had his abdominal cavity covered by millions of tubercles; two or three of these had been excised and the pathologist thought they must be sutures. However, a small ulcer had perforated; the tubercles were evidently small pieces of foodstuff that had escaped.

Dr. C. M. Greenslade (Dunedin) believed that on the whole it was better not to do a gastro-jejunostomy in the presence of acute perforation. The operation might not be required. It was better to do this operation on an abdomen which was not the seat of peritonitis. He found that it was quite sufficient to oversew the ulcer. He was not frightened of obstructing the lumen of the stomach or duodenum, because the perforation could always be plugged with omentum if the lumen of the bowel was unduly obstructed. He had operated on a patient six days after closing a perforation. At the first operation there had been a considerable degree of œdema around the perforation in the stomach, but at the second operation the place where the ulcer had been, was not at all obvious; all the œdema had disappeared. An operation was performed on this patient for hæmorrhage from a kissing ulcer which had eroded a small vessel in the pancreas. He looked upon gastric and duodenal ulcer as a complaint associated in a large number of cases with a focus of infection in some other part of the body. It might be chronic appendicitis, pyelitis, pyorrhœa, chronic tonsilitis, gall bladder disease or pelvic trouble in women. He preferred at the first operation merely to close the ulcer and in certain cases to drain. During convalescence the gums and any obvious septic foci were treated. After from one to three months a second abdominal operation was performed. The appropriate gastric operation was then undertaken; this might be a partial gastrectomy, a duodenectomy, a gastro-duodenostomy or a gastro-jejunostomy. In every case the appendix was removed. Only a year previously he had had to remove a gangrenous appendix from a young woman who had had a partial gastrectomy only three months before. On another occasion he had found a perforation of both the appendix and the duodenum at the same time. In addition any further operative procedures that were necessary, were carried out. He believed that the chance of success in any abdominal operation performed in the absence of peritonitis was much better than if it were done when the peritoneum was suffering from the irritation resulting from the perforation.

Dr. F. S. Batchelor (Dunedin) asked Mr. Devine for his opinion of local excision of duodenal ulcer. He thought it was a good operation, better than gastro-enterostomy and he had been performing it recently with success.

Dr. Wilby Fisher (South Auckland) wanted to know in what different cases of disturbed motility did gastro-enterostomy do good. Was lavage any good? He had had one case with good result.

Mr. Gordon Craig (Sydney) referred to the work of Finney and asked if Mr. Devine had any views upon the operation combined with excision of the ulcer.

Dr. J. A. Jenkins (Dunedin) found that after a partial gastrectomy, although there was very rapid emptying of the stomach, there were no complaints.

Mr. H. B. Devine in reply pleaded only for a better understanding of the principles underlying gastro-enterostomy. He agreed with Professor Gordon Bell and Sir George Syme that gastro-enterostomy was not advisable as an addition to suture of the perforated ulcer. The gastric muscle was often injured from the local peritonitis and an essential requisite of gastro-enterostomy was absent and the extra operation might lessen the patient's chances of recovery. Often the perforations were due to acute ulcer and a gastro-enterostomy was not indicated in these cases. He agreed with Dr. Barnett that too short a loop was very liable to an axial twist and that it had no latitude for alteration of the size of the stomach and was just as dangerous as a long loop. He did not agree with him that an incision in the upper part of the abdomen should be carried far down in order to get a low and adherent appendix. An incision as far as the umbilicus was sufficient for any abdominal work and for the removal of most appendices. The lower post of the rectus had more tone and function than the upper and injury to it should be avoided if possible. Like Sir Donald McGavin, he was surprised at the very high percentage of jejunal ulcer occurring after gastro-enterostomy according to the Mount Sinai Hospital statistics, but he was inclined to accept the British statistics as a better indication rather than the American or Continental because he thought the British surgeon did a gastro-enterostomy based on better physiological principles. Mention had been made of the clear-cut clinical syndrome of duodenal ulcer which Moynihan had described. This clinical picture was often present and there was no ulcer and conversely there was often no definite syndrome and duodenal ulcer was present. In agreement with Dr. Gordon Bell he did not believe in doing gastro-enterostomy in the presence of a hæmatemesis except when there was definite evidence that the source of the bleeding was a chronic ulcer. Hæmatemesis, he thought, was usually due to acute ulcer. He thought that bleeding ulcers had a different ætiology to other ulcers, probably of the nature of and what he had called in his paper "debility" ulcer. General treatment and if this failed a gastric exclusion or a gastrectomy were the indications in these cases.

Many failures after gastro-enterostomy could be minimized or avoided with appropriate treatment, but he was speaking of those cases of gastro-enterostomy which had resisted all forms of treatment.

Replying to Dr. Stanley Batchelor, gastrectomy did not have the unpleasant after effects due to disturbances of gastric mobility that gastro-enterostomy had. This might be attributed to the fact that a "gastro-enterostomized" stomach had two exits which rendered it more liable to errors in the emptying time than a "gastrectomized" stomach with one opening. Anyway it was a clinical observation that gastrectomy was much freer from untoward after effects than gastro-enterestomy. He would do a partial gastrectomy or partial gastric exclusion (Devine) when the duodenal ulcer was very old, callous and especially if it were on the posterior wall.

Mr. Devine thought that the effect of chronic appendicitis in producing reflex dyspepsia and contributing to the formation of ulcer was exaggerated. Most patients on whom he had operated for ulcer, had previously been operated on for chronic appendicitis and in 30% the ulcer had been present at the time.

He agreed with Mr. Gordon Craig that Finnery's operation was very useful for certain kinds of duodenal ulcer especially if it were combined with excision of the ulcer. He agreed with Dr. Carrick Robertson, Dr. Campbell Biggs and others that the treatment of a preoperative or post-operative acidity was only the treatment of a symptom and

that treatment such as alteration in habits and mode of life aimed at the nervous system was more important.

DR. ST. JOHN DANSEY (Sydney) in reply to Dr. Fisher said that he did not employ lavage. It made the peritonitis general. He used a sucker and pads to get the fluid away and drained through a suprapubic incision. He felt that there would be opposition to his statements about gastro-jejunostomy. Up till two years ago he closed the ulcer, but he found that the patients did not come back for the second operation and he thought that the best results were obtained by doing gastro-jejunostomy when the patient was well enough to stand the operation. He did not do it in patients who were very ill. He found that after the gastro-jejunostomy his patients had a better convalescence than those in which the ulcer was merely oversewn.

SECTION III.—OBSTETRICS AND GYNÆCOLOGY.

Cæsarean Section.

DR. ARTHUR M. WILSON (Melbourne) read a paper on the problems of Cæsarean section. He confined his remarks to what he termed the most difficult problem, the selection of the case, and to its corollary, the frequency with which the operation should be performed. In connexion with Cæsarean section it was always necessary to remember that there was a definite operative risk, that the operative risk was increased in the abnormal case, that the mortality in infected patients was at least 20%, that no operation was more likely to be followed by ventral hernia, that at least 4% of all Cæsarean scars ruptured at a subsequent confinement and that the performance of the operation limited the size of the family. The types of Cæsarean section might be divided into three: elective, delayed elective (after trial of labour) and emergency. Elective operations were required for extreme degrees of pelvic contraction, insuperable obstruction by tumours, undilatable atresia of cervix and vagina, after a previous Cæsarean section for contracted pelvis, when the patient had lost her first two or more children from dystocia and for constitutional complications of pregnancy. Delayed elective operations might be necessary for minor degrees of pelvic deformity or obstruction by tumours. Emergency operations might be performed for obstructed labour in contracted pelvis, obstructed labour due to presence of tumours, in certain cases of eclampsia, of accidental hæmorrhage, of *placenta prævia*, of presentation of the cord and of malpresentation. Dr. Wilson discussed each of these indications in turn. He emphasized the importance of trial of labour in minor degrees of pelvic deformity. In regard to induction of labour he pointed out that the disadvantages of fœtal mortality and neo-natal death had to be weighed against the fact that a patient could have any number of inductions performed without serious ill effects. In discussing the question of obstructed labour in contracted pelves Dr. Wilson pointed out that for each hour of delay between rupture of the membranes and operation the maternal mortality was increased by 1%, each vaginal examination increased it by 1%, attempts at forceps or other modes of delivery increased it by from 10% to 15% and that the presence of a discharge increased it by 20%. The operation would be necessary in only an extremely small number of patients with eclampsia. The safest method in *placenta prævia* was bipolar version without extraction of the child; Cæsarean section might in certain rare instances be required for the sake of the mother. In regard to malpresentations the necessity for Cæsarean section should hardly ever arise if the patient was a *multigravida*, otherwise each case had to be judged on its own merits. In discussing the frequency of the operation Dr. Wilson gave figures for the Women's Hospital, Melbourne, and compared them with figures from other parts of the world.

DR. HENRY JELLETT (Christchurch) read a paper on the abuse of Cæsarean section. He said that between unaided delivery and the universal performance of Cæsarean section there was a middle course, known as the art of midwifery. Its object was to assist Nature, to relieve pain, to remove complications and to avoid operative procedures as far as possible. There was more than at any previous time a tendency to forget that complications of labour could be treated by obstetrical methods and to think that the safe cut to the desired end passed through the abdominal wall. The mortality from Cæsarean section varied directly according to the stage at which the operation was done. When it was done for contracted pelvis before the beginning of labour the mortality was 1·4%, when the operation was done early in labour it was 1·8%, when it was done late in labour the mortality was 10%, after a preliminary induction of labour it was 14%, after attempted forceps delivery it was 25·7% and after attempted craniotomy it was 50%. Even under the most favourable circumstances the mortality was 1·4%. When the operation was done late in labour, there was risk of a latent infection and the only remedy for this if Cæsarean section was performed, was to remove the uterus. It was a fact that every case in which the operation was unforeseen and was done for obstructed labour, was directly due to a failure in diagnosis. The risks of Cæsarean section did not end with the convalescence of the patient, there was the risk of permanent injury to the abdominal wall which was prone to tear in a subsequent labour. The three conditions in which Cæsarean section was most commonly abused, were contracted pelvis, eclampsia and *placenta prævia*. There were usually considered to be four degrees of contraction of the pelvis. The flat pelvis with a true conjugate of 8·25 centimetres or more was seldom an indication for operation. When the true conjugate measured between 8·25 and 7·0 centimetres Cæsarean section was permissible, but could be replaced by induction or pubiotomy. In the other two degrees of contracted pelvis the operation was indicated. The results of Cæsarean section in eclampsia proved it to be almost the most fatal line of treatment. Unless they were prepared to accept obstetrical incompetence as a valid indication for Cæsarean section, the only justification for it in *placenta prævia* was that it would save more infants. There was only a very tiny place for the operation in the treatment of *placenta prævia*. In the treatment of transverse presentation there was no place for it. The desire to do Cæsarean section unnecessarily was begotten by *furor operandi* out of obstetrical ignorance. Dr. Jellett quoted statistics for all of his statements and pointed out that all his opinions were endorsed by Whitridge Williams. He concluded by saying that discretion was the better part of midwifery.

PROFESSOR J. C. WINDEYER (Sydney) said that Dr. Jellett had emphasized the middle course in obstetrics, the art of obstetrics. Cæsarean section had been overdone everywhere, not so much in Australia as in America, where some results were disastrous. Statistics showed that in some hospitals one out of every five had died following Cæsarean section, the result of ill-advised use of the operation. He would discuss contracted pelvis later on in the afternoon.

He had not performed the operation for eclampsia. In a very few cases it might be necessary to undertake the operation, but all were agreed that conservative treatment was the ideal method. He was very pleased to see the excellent results of the Rotunda treatment. He considered that to obtain beneficial statistics Cæsarean section should be notifiable.

In the Royal Hospital for Women, in Sydney, during the years 1920 to 1925 inclusive there had been 11,266 confinements. Cæsarean section had been performed one hundred and twelve times (1%). This corresponded with the Melbourne figures. The total mortality was twelve deaths among the one hundred and twelve patients. Of the operations 66·9% were operations for contracted pelves with a mortality rate of 7·1%. There were a few cases of accidental hæmorrhage and still fewer cases of the toxæmias and obstruction due to fibroids. Among the remaining forty-two patients the mortality rate was 6·6%.

DR. R. MARSHALL ALLAN (Melbourne) gave details of two hundred and eleven Cæsarean sections undertaken by Victorian medical practitioners. The indications and number of operations had been as follows: Contracted pelvis, 110; *placenta prævia*, 35; eclampsia, 22; toxæmia,

11; fibroids, seven; accidental hæmorrhage, five; rigid cervix, five; ovarian cyst, four; abdominal adhesions, congenital malformation of the vagina and fœtal ascites, each two; breech presentation, impacted shoulders, locked twins, asthma and bronchitis, diphtheria, cardiac disease, each one case. Of the patients 152 had been *primigravidæ* and 59 *multigravidæ*. Maternal recoveries had numbered 190 and deaths 21, a mortality rate of 9·9. Living fœtuses had numbered 184 and deaths 28, a mortality rate of 13·2.

DR. F. R. RILEY (Dunedin) expressed agreement with the previous speaker. He spoke of the conditions obtaining on a few occasions when it had been necessary for him to perform the operation. He considered that the indications were: (i.) contracted pelvis, (ii.) eclampsia, particularly in a *primipara* with an undilated *os* when conservative methods had failed to produce improvement, (iii.) accidental hæmorrhage (in the case of central *placenta prævia* Cæsarean section was sound treatment), (iv.) in elderly *primiparæ*, especially after reposition efforts had failed in a breech presentation.

DR. P. G. BRETT (Melbourne) thanked the speakers for their instructive papers. In cases of tumours obstructing labour it was not always necessary to perform Cæsarean section. Occasionally the tumour could be removed and the pregnancy allowed to go on naturally. He quoted a case of a large ovarian cyst obstructing labour. The cyst had been dealt with by abdominal section. A live child had been delivered with forceps and the patient had a smooth convalescence without any complications. Later she had had another child normally. He also quoted a case of pelvic hydatids. The cyst had been punctured through the posterior fornix and the child delivered. Pus had drained through the colpotomy wound for some time and no rise of temperature occurred. The question of the postmature child was a difficult one; if possible, the pregnancy should not be allowed to go over time.

DR. C. NORTH (Dunedin) considered that vaginal hysterotomy had its place in a discussion on Cæsarean section. He quoted two successful cases. He thought that the operation was neglected largely on account of the fear of damage to the bladder. He had never found any difficulty. He agreed with the suggestion of notification of Cæsarean section.

DR. LENNOX SPIERS (Victoria) asked what should be done if a patient with eclampsia failed to respond to conservative treatment.

DR. J. P. S. JAMIESON (Nelson) referred to induction of labour and asked whether stimulation of the uterus might not result in cerebral hæmorrhage in the infant.

DR. E. H. SIEDEBERG (Dunedin) pleaded for antenatal supervision from the early months of pregnancy. With proper antenatal care Cæsarean section for eclampsia should be almost unknown.

DR. P. L. HIPSLEY (Sydney) said that in cases of antenatal hæmorrhage necessitating Cæsarean section, transfusion saved the patient from death due to hæmorrhage. He thought that if notification of Cæsarean section were compulsory, practitioners might avoid recourse to it even when the operation was necessary.

Dr. Henry Jellett in reply said that in *placenta prævia* in addition to the gross mortality (10%) the crippling after effects, sterility and a weakened uterus, had to be taken into account. Central *placenta prævia* was not an indication for the performance of Cæsarean section in the interests of the mother, but in those of the child. He could not agree with Dr. Riley that it was an indication for the operation.

In mild degrees of contracted pelvis the treatment should not be undertaken by the general practitioner. Pubiotomy generally met the case. External measurements were of value only to show whether internal pelvimetry was necessary or not. They should never be allowed to influence the final decision. Vaginal hysterotomy certainly was an excellent operation. He emphasized again the necessity of an examination under chloroform when the obstetrician was in doubt.

DR. A. M. WILSON said that he was emphatic about performing Cæsarean section in the case of "the third child." In eclampsia indications for Cæsarean section were much more definite. Conservative treatment, if carried out thoroughly, with attention to every detail, was the ideal method. When inducing labour he used quinine and castor oil only. He did not advocate quinine in *primiparæ*. He did not use bougies. In concealed accidental hæmorrhage transfusion was his routine practice.

SECTION IV.—PATHOLOGY AND BACTERIOLOGY.

Renal Infections.

DR. C. H. KELLAWAY, DR. C. J. O. BROWN and MISS F. E. WILLIAMS (Melbourne) contributed a paper on ascending renal infection. They pointed out that it was general to regard nearly all renal infection as blood borne. When, however, the innervation of the bladder was deranged or when obstruction from mechanical causes occurred in the outflow from the bladder, it was possible that ascending infection might occur by the lymphatics or through the lumen of the ureter. They referred to the work of several investigators on the subject and pointed out that some experiments which favoured ascent along the lumen, were not free from objection on the ground of insufficient control of the possibility of blood infection. They reported experiments carried out by themselves on guinea pigs, rabbits and cats in which partial obstruction of the urethra or disorganization of the nervous mechanism of micturition had been produced. In guinea pigs micro-organisms were used and in the other animals suspension of "oil blue" was injected into the bladder. It was found that neither failure to grow bacteria from the blood taken at autopsy nor a sterile hydronephrosis could be relied upon to exclude blood infection, though the latter control appeared to be efficient for the earlier hours of the experiment. It was found that blood cultures taken at autopsy could not be relied upon to detect bacteriæmia during life. As a result of the experiments in which infection of the pelvis of the kidney was produced after the injection of diphtheroids into the bladder, it was concluded that the results might be equally well explained by blood or lymphatic infection or by spread along the lumen of the ureter. There was no clear indication as to which course the organisms had pursued. It was found that in cats and rabbits the conditions upon which ascent along the lumen depended were very different from those obtaining in the guinea pig. In the last mentioned animal ascent readily took place if the mechanism of normal micturition was disorganized. Injections of carmine were also used and the authors were strongly opposed to the view that ascent occurred by way of the lymphatics as the particles were invariably found within the lumen of the ureter and pelvis and never in the wall of the ureter or its accompanying lymphatics.

PROFESSOR J. B. CLELAND (Adelaide) asked whether bedsores accompanying kidney infection might not be due to spinal lesions when the bladder was infected. He had noticed this in Adelaide. There was no inflammatory reaction round the bedsores and no tendency to thrombosis in the veins. Hence there was a continued passage of bacteria into the blood stream from the bedsores. These organisms were filtered through the kidney and in consequence pyonephrosis might occur. There were many other conditions in which organisms in the blood stream might be excreted through the kidney and so cause infection.

DR. J. F. MACKEDDIE (Melbourne) said that it was interesting to physicians to know how the bacteria got into the circulation as far as renal infection was concerned. Infection by the blood was more prompt than by the lympathics or the ureter. From the infection of the bladder an endocarditis might occur without infection of the kidney. The physicians' work was based on the pathological investigation. He was interested in the different rate at which different organisms reached the pelvis of the kidney.

DR. KELLAWAY replied that he would emphasize one or two points in his paper. In reply to Dr. MacKeddie and Professor Cleland it was clear that the general trend of

evidence from his experiments was that ascending infection was possible along the lumen under the two types of conditions described. This was not the only method of ascent, for unquestionably there was ascent along the lymphatic. There was, however, no evidence of direct infection of the urine through the lymphatics without first an infection of the blood stream.

With regard to Professor Cleland's remarks on bedsores he thought that it was extremely probable that bedsores might occur in this way. They could quite readily be a source of blood infection. When organisms were introduced into the bladder, ascent might readily occur along the lumen of the ureter. The establishment of infection in the urinary tract after ascent depended on the nature of the organism. Infection from the blood stream might also depend on the same factor. He had never seen experimentally produced a definite extensive lesion of the kidney resembling the type known as surgical kidney. Infection of the pelvis of the kidney was all that was produced. He did not deny the possibility of lymphatic infection, but there was no clear evidence that it occurred. He would not state dogmatically that the lumen was the only path of infection.

The Anæmias.

DR. L. B. BULL AND PROFESSOR J. BURTON CLELAND (Adelaide) read a paper on the anæmias, the leuchæmias, leucosarcoma and allied conditions. Discussing pernicious anæmia they said that they regarded a high colour index with megalocytosis as almost diagnostic. They placed more importance on the presence of megalocytosis than on the high colour index. They did not regard the blood as megalocytic unless over 30% of the red cells had a diameter larger than normal. A leucopenia was of great assistance in diagnosis, but it might be absent, although it was always present at some stage of the disease. They regarded the hæmolytic anæmia of pregnancy as distinct, although it bore striking resemblance to pernicious anæmia. After passing mention had been made of aplastic anæmia and of the benefits derived from transfusion of blood in this condition, they went on to discuss leuchæmia. They raised the question as to whether leuchæmia was the essential and primary lesion of the disease or merely a secondary result and not necessarily an inevitable one. Evidently there was some normal restraining mechanism which governed the number of cells of different kinds circulating in the blood. In the leuchæmias this barrier was removed or overcome. They thought that extreme multiplication of cells behind the barrier was the explanation of lymphatic leuchæmia. In regard to this disease there were several possibilities. (i.) It might be a hyperplasia of lymphoid tissue with an overflow of cells into the circulation, the result of dyscrasia; (ii.) it might be hyperplasia of lymphoid tissue with overflow due to the stimulant action of some toxin or the establishment of a virus; (iii.) it had been suggested that the leuchæmias represented malignant neoplasms arising in lymphatic tissues or from certain constituents of the bone, marrow or spleen. It did not seem that leuchæmia commenced in one centre from which other parts were seeded. The authors discussed these possibilities and referred to two cases which they described as leucosarcomata. In these there were present tumour-like infiltrating masses composed of the same type of cell. They concluded that the leuchæmia picture was only incidental to the disease and not the essential characteristic. The leuchæmic picture might manifest itself only as a terminal event.

DR. A. H. TEBBUTT (Sydney) said that he had examined test meals for the presence of bacteria. He found that in the presence of hydrochloric acid only small numbers of bacteria were obtained on culture. In the absence of free hydrochloric acid large numbers of bacteria were found. He had found organisms similar to those found by Dr. Pearson, but he had also obtained large Gram-negative cocci. In pernicious anæmia he had noticed that when there was an atypical blood picture, the clinical signs and symptoms were also atypical.

Professor Cleland's paper on the leuchæmias was very interesting especially his description of infection from a wound. He had seen a similar condition in Sydney. A student had received a wound in a dissecting room and subsequently noticed an enlarged gland at the elbow. Symptoms resembling diaphragmatic pleurisy had been observed and there had been hæmorrhages into the skin over the whole body. There had been no leucocytosis and the leucocyte count had varied from 4,000 to 7,000. There had been a progressive fall in the polymorphonuclear-neutrophile cells and other granular cells. There had been a rise in monocytes. These cells had a varying morphology of the nucleus, but they were non-granular. The patient had died in thirty-five days. At the *post mortem* examination all organs were found to be packed with the same kind of cells as those found in the blood. He wondered did these cells enter the blood of the internal organ and leave it again before reaching the peripheral circulation. He mentioned Aschoff's work.

It had occurred to him that in aleuchæmic leuchæmias the condition might be really a leuchæmia of the reticulo-endothelial system. In the capillary vessels of the spleen and lymphatic glands there were cells of the reticulo-endothelial system. He thought these cells passed from the right side of the heart to the lungs and there left the blood vessels passing into the alveoli. They must have got into the marrow by the systemic circulation. But the feature of these cells was that they wandered from the blood stream. They were not essentially blood cells. They must have entered the peripheral circulation and left it again.

DR. ETHYL BYRNE (Newcastle) said that Professor Cleland had referred to blood transfusion in a case of aplastic anæmia. She had seen six patients with this condition, only one of whom had transfusion. This patient died and at the *post mortem* examination thrombosis of the cavernous sinus was found. She thought that this might have been caused by the transfusion.

DR. P. P. LYNCH (Dunedin) said that he was interested in Professor Cleland's reference to the case in which there were lymphoid cells in the tumour round the kidney. He had had a similar case in Wellington. The kidney was thought to be tuberculous and was removed at operation. On section lymphoid cells were found throughout the organ with a few remnants of kidney tissue remaining. The case was further investigated, but the patient had not suffered from lymphatic leuchæmia. The patient died later of uræmia. He described another case of a young woman with tumour masses in both breasts. The tumour was composed of small round cells. There were enlarged glands in other parts of the body and the case was rapidly fatal.

DR. A. B. PEARSON (Christchurch) said that in the routine examination of anæmic patients in the Christchurch Hospital he found a constant achylia in pernicious anæmia. This was also found in subacute combined degeneration, but in aplastic anæmia he found no achylia. Smears and cultures of test meals were regularly made in the Christchurch Hospital. In achylia bacteria were always found throughout the meal not only in anæmias, but also in achylia associated with other conditions, for example, rheumatoid arthritis. The types were nearly always streptococci and staphylococci. The types were those found in the mouth and upper air passages. In cases where there was subsequently discovered a carcinoma, there was a greater growth of flora than in pernicious anæmia and organisms such as *Micrococcus catarrhalis* were common. Obviously the hydrochloric acid was the strong antiseptic, as the smallest concentration inhibited the growth of organisms. Careful examinations were always made of the meals before they were given in order that they could be certain that the meals were sterile. In some cases it was found that there was some infection present. Should the patient have a good acid curve even the organism present in the meal before administration was inhibited. Other experiments were carried out with the use of bile as an inhibiting agent, but it was found that the organisms grew unless the bile was present in high concentration.

In the treatment of conditions similar to pernicious anæmia vaccines were often asked for. It was customary to make these vaccines from test meals thus enabling a pure culture to be obtained rapidly. He was not in favour of using vaccine in these cases, but advocated the administration of frequent doses of hydrochloric acid to inhibit the growth of organisms.

DR. J. F. MACKEDDIE (Melbourne) said that there was a great change of view with regard to blood conditions, especially in connexion with nomenclature and blood film pictures. When the cause of pernicious anæmia was really discovered, he thought there would be a change of name. With regard to the neurological findings in pernicious anæmia the modern view was that subacute combined degeneration was not a sequence of pernicious anæmia, but an accompanying manifestation. In Queen's Square it was regarded as entirely independent.

Professor Cleland had given a very clear statement with regard to the ætiology of lymphatic leuchæmia. There was a tendency to group all these conditions as some diabolical disturbance of all the blood-forming organs. That was why he was not surprised to find in pernicious anæmia an accompanying lymphatic condition and *vice versa*.

Renal Efficiency.

DR. S. D. RHIND (Wellington) in dealing with renal efficiency, mentioned the limitations of clinical examination and drew attention to the value of biochemical tests. He briefly reviewed the physiology of urinary secretion and questioned some of Cushny's opinions.

There were four chief methods of testing renal efficiency —blood analysis, urine analysis (with comparison of the two), concentration tests and dye excretion tests, each being appropriate to some clinical problem, either medical, obstetric or surgical.

Medical problems included the importance of albuminuria in healthy persons and also of albuminuria which could be tested by estimating the blood nitrogen, but this might be above normal in intestinal obstruction, suppuration and heart disease. The tests were useful in regulating diet in nephritis, but the estimation of renal efficiency in disease conditions was not very satisfactory.

In obstetric practice, tests were of value in the presence of albuminuria without symptoms, with toxic symptoms and with eclamptic symptoms and would discriminate between toxic symptoms from antecedent nephritis when pregnancy might require termination and preeclamptic states.

In surgery the tests were of great value in determining suitability for operation for urinary affections. Prostatectomy should be done in two stages if the blood nitrogen was above 60 milligrammes per hundred cubic centimetres.

The total non-protein nitrogen test was more sensitive than the blood urea test; the uric acid estimation was valued by some, but the creatinin estimation was not considered important. He drew attention to the value of estimating the nitrogen in the saliva, which was easy and rapid. The salivary nitrogen approximated to that of the blood. Five cubic centimetres of saliva were titrated with 5% silver chloride and the end-point estimated by a brown colour obtained with sodium carbonate, twenty to fifty cubic centimetres were required, corresponding to twenty to forty milligrammes of blood urea.

Dr. Rhind then briefly reviewed the technique of the Volhard water and concentration tests, the urea concentration tests and the dye excretion tests and mentioned some fallacies attaching to them.

DR. R. H. BAXTER (Hanmer) said that he supported Dr. MacKeddie in his plea for better clinical examination and better correlation between the clinical examination and the laboratory finding. Many genito-urinary surgeons believed absolutely in the blood urea tests as indicative of the fitness of the patient for operation. In many cases, however, they were let down by these tests. Even Maclean's figures were open to doubt especially with regard to blood urea. Many kidneys which were affected to a great extent, yielded a blood urea figure of only fifteen milligrammes and this led the surgeon to operate with bad results later. The blood urea figures must be considered very carefully and he was doubtful of any blood urea if it was not under ten milligrammes, especially if there was any sign of kidney inefficiency.

DR. RHIND replied that everyone agreed that the laboratory tests were still in their infancy. No one claimed any strength upon any one test. He did not agree with Dr. Baxter's remarks.

DR. J. F. MACKEDDIE (Melbourne) said that in kidney conditions they did not think enough of ordinary examination. With regard to the water test—quantity and specific gravity taken at intervals—this like all other tests was being replaced by chemical tests.

Paragonimiasis.

DR. G. M. HEYDON (Townsville) submitted a paper on the occurrence of *Paragonimus ringeri* in a New Guinea native. He said that in September, 1926, Dr. T. Clive Backhouse had sent from New Guinea some specimens obtained from the lung of a native at *post mortem* examination. Two flukes had been found and these had been identified as *Paragonimus*. Dr. Heydon described the complete specimen in detail and pointed out that the character of the ova excluded a diagnosis of *Paragonimus compactus*. The shapes of the spines had been investigated. According to Ward and Hirsch the characters of the spines were the most reliable means of differentiating the species of the genus *Paragonimus*. The spines in the specimens under discussion had resembled that figured by Vevers for *ringeri* more than that figured for *compactus*.

Hookworm Infection.

DR. G. M. HEYDON (Townsville) submitted a paper on the influence in hookworm infection of the species of worm and of the race of man and on the characters of the larvæ as a means of determining the species distribution.

He pointed out that the two hookworms proper to man, *Ancylostoma duodenale* and *Necator americanus*, were not equally important as producers of disease. Great diversity of opinion existed in regard to the pathogenicity of *Necator americanus*. The International Health Board of the Rockefeller Foundation supported the view that a few worms, especially if they were necators, did no appreciable harm, but that many, even if necators only, caused more or less evident amount of anæmia and other physical and mental damage. There was convincing evidence of morbidity due to heavy infection with *Necator americanus*. Dr. Heydon described observations made in New Guinea in hookworm disease. He had found it impossible to distinguish by clinical signs and general appearance boys who harboured many worms from those who harboured only a few. Dr. Heydon then described the position in North Queensland and emphasized the necessity for determining the prevalence and distribution of both worms in survey and control work. The worm count method of determining the species distribution consisted in the examination of the stools passed for two or three days after the administration of an anthelmintic. He advocated the adoption of a method which he claimed was more satisfactory. It consisted in the study of "mature" larvæ cultured from small specimens of fæces.

SECTION VI.—OPHTHALMOLOGY.

Non-Suppurative Intraocular Infections.

DR. H. F. SHORNEY (Adelaide) dealt with the group of non-suppurative infections of the eye. He recognized as ætiological factors intestinal autointoxication, infections of the teeth and gums, tonsils and accessory sinuses, metabolic disorders of the type of diabetes, conditions dependent on altered chemical action, general infections, such as tuberculosis, syphilis and gonorrhœa, infection from perforating wounds of the globe, plastic inflammations and so forth. In discussing the treatment he recommended atropine as drops or in the form of ointment for acute iritis, either alone or combined with "Dionin." Duboisine could also be used. Acute iritis nearly always yielded to intramuscular injections of milk. He indicated the doses according to age. Of the drugs he mentioned "Afenil," "Alvonal," a hypertonic solution of glucose, "Urotropin," "Trypaflavin," "Argoflavin," both of which were better than "Collargol," "Electrargol" and similar preparations, "Atophan," "Atophanyl," "Bismogenol," "Spirobismol," sodium cacodylate, "Solarson," "Arsenelectroferrol" and "Astonin." Of the biological remedies unskimmed milk was placed first. It was useful

in iritis, irido-cyclitis in acute, subacute and chronic forms, in retrobulbar neuritis, albuminuria, vitreous opacities and vitreous and retinal hæmorrhages. Of the milk preparations mention was made of "Aolan," "Caseosan," "Hypertherman," "Phlogetan" and "Omnadin." "Vaccineurin" was made from virulent strains of staphylococci and *Bacterium prodigiosum*. It was useful in optic neuritis, in paralysis of the ocular muscles and in trigeminal neuralgia. "Arthigon" was used in gonorrhœal iritis. Typhoid vaccines, antistreptococcal serum and vaccine were also mentioned. Dr. Shorney had had success from "Sanocrysin" in one instance. "Olyptol" was also added to the list. Light treatment had its uses. The quartz lamp exercised a favourable influence. X rays are valuable especially in the granular form of iritis. Dr. Shorney employed subconjunctival injections of sodium chloride, alone or combined with the oxycyanide of mercury.

DR. A. M. MORGAN (Adelaide) said that he had found a distinct redness of the nerve head without swelling in retrobulbar neuritis. In the treatment of acute iritis he had given up the use of atropine crystals. He mentioned that atropine acted by paralysing the sphincter muscle and strong solutions were not necessary. He had seen cases of atropine poisoning through the drug getting into the stomach by way of a nasal duct. His experience of injection was confined to milk only; he had been disappointed with the results which he believed were no better than with the old medical treatment. He found that the patient developed severe constitutional disturbances, such as rigors and rises of temperature and became very chary about coming for a second injection.

DR. G. W. HARTY (Wellington) agreed with the speaker regarding the value of milk injections. He said that he had obtained good results in corneal wounds and hypopyon ulcer following trauma. He did not use it in the heroic doses recommended by Dr. Shorney. He found it very useful in small doses and always started off with a very small dose. He was in the habit of giving hypnotics in acute iritis when the pain was severe. He thought that they were apt to pay too much attention to septic causes of optic neuritis and to forget intracranial pressure which was the most common cause of optic neuritis. He mentioned that redness of the disc was quite common in cerebral hæmorrhage.

SIR JAMES BARRETT (Melbourne) agreed with Dr. Harty with regard to optic neuritis and intracranial pressure as a chief cause. He mentioned Cushing's experiment in driving pegs into dogs' brains; this caused a rise of pressure and œdema of the disc after a few hours. He had seen inflammation of the nerve head in syphilis; he was doubtful if it occurred in lead poisoning and stated that it rarely arose from septic diseases. Although he did not use blisters in the treatment of iritis, he did not think that any form of treatment should be rejected because it was not proved conclusively to be good in everyone's hands. With regard to sympathetic ophthalmia he had experience of sixty or seventy cases, but only one in the previous ten years. He had not used milk injections in treating the condition. He thought that many were syphilitic, but many were not. Prompt excision of the injured eye and the greater attention to asepsis were responsible for the lessening of the number of cases. During the war at the Dardanelles he had much experience of eye injuries, but had not seen sympathetic ophthalmia. He recommended a solution of "Phenoline" as the most valuable drug in his experience for injection. It could be used by injection, intramuscularly or subcutaneously, without bad effects; it was also a local anæsthetic. The pain of acute iritis was nearly always a very intense pain and he found that large doses of sodium salicylate combined with sodium citrate were very useful for allaying the pain. As much as 2·4 grammes every two hours could be given. He congratulated Dr. Shorney on the work he had done.

Dr. Shorney in reply said he was glad that the previous speakers were in accordance with his views that it was a descending neuritis accompanied by congestion of the nerve head. In reply to Dr. Morgan he said that he always welcomed reaction after milk injections which he thought was necessary in the treatment. To Dr. Harty he said that his doses were those recommended by the originators of the method. They had been used for eleven years without any ill effects. With regard to treatment by blistering he thought that the serum might act as a form of protein therapy.

Red-Free Light in Ophthalmoscopy.

DR. J. RINGLAND ANDERSON (Melbourne) gave an account of the work that had been carried out in connexion wtih the use of light from which the red rays had been removed for ophthalmoscopy. He referred to the controversy concerning the yellow colour of the macula. Since the yellow colour of a transparent yellow disc lying on a red background in ordinary light did not appear yellow, it followed that the yellow macula was invisible when illuminated in the ordinary way. It was necessary to abolish the chorioidal light by filtration of the red rays and by utilizing a light that was not yellow. A strong source of light was needed to illuminate the fundus after the red rays were absorbed. Dr. Anderson described the appearance of the macula in the enucleated eye if the anterior layer of the retina was dislodged from the posterior layer under water. He put forward the view that the yellow pigment served as a filter. Red-free ophthalmoscopy was very important and informative. Variations in transparency and the disappearance of striation were detected by this method. Dr. Anderson discussed the significance of mottling in the area along the temporal vessels. The capillary plexus could be studied much more readily by the red-free method than by other methods of ophthalmoscopy. He also dealt with the light reflexes and with corneal staining in this connexion.

DR. H. F. SHORNEY (Adelaide) said that he preferred a Schwartz lamp to that of Zeiss. He said that there were three important points about the use of the red-free lamp. It was extremely useful in the recognition of early optic neuritis; cystic maculæ could be recognized when the ophthalmoscope was of no use; minute hæmorrhages could be recognized which could not be seen by the ordinary ophthalmoscope. In his opinion the lamp was of great value and of special use in the diagnosis of early optic neuritis.

The Prescribing Optician.

DR. G. W. HARTY (Wellington) opened a discussion on the relations between the ophthalmic surgeon and the prescribing optician. He pointed out that while registration of sight-testing opticians was in force in Tasmania, Queensland and South Australia, the bill to provide for this had been rejected in Great Britain and shelved in New Zealand. Inman had put forward the argument that headaches and certain other disorders were not remedied as frequently as was usually held by the correction of errors of refraction. He had suggested that some of the contributory factors had not been sufficiently investigated. Heredity, emotional stress and the stress of modern civilization were no doubt powerful factors. Much attention had been directed to septic infections of teeth, tonsils and paranasal sinuses, but the influence of these processes and of the exanthemata in producing inflammatory conditions of the eye and errors of refraction was not fully appreciated. The ætiology and treatment of many refractive errors were being studied. Neuro-vascular changes had to be investigated with the aid of the physician. It was obvious that the finer changes made it difficult for anyone other than a person who had been trained as a medical practitioner to discriminate between health and disease. Some opticians referred all patients to medical practitioners when disease was suspected, but many did not.

Dr. Harty recalled the resolution of the Australasian Medical Congress, Brisbane, 1920, against the registration of opticians as sight testers. He also referred to the report of the Council of the Ophthalmological Society of Great Britain on sight testing by opticians in which it was argued that State recognition of sight testing by persons possessing only optical qualifications would not be in the interests of the community. Bishop Harman had pointed out that 5% of persons who consulted ophthalmic surgeons, had serious organic diseases of their eyes.

Of the remainder the majority had conditions which could not safely be dealt with on mechanical lines. In 1923 the British Medical Association had adopted a resolution protesting against the proposal to register sight testing opticians. The Council of the New Zealand Branch of the British Medical Association had confirmed this resolution. On the other hand both in Great Britain and in the United States of America bodies had been formed to promote the interests of dispensing opticians. In conclusion he quoted the remarks made by the Right Honourable Neville Chamberlain when he had refused to grant registration to opticians as sight testers on the ground that the risk of neglecting or overlooking disease elsewhere than in the eye was too great to be ignored.

Dr. A. M. Morgan (Adelaide) said that they had a law relating to the registration of opticians and things were not much different from what they were before. In Adelaide the optician was not allow to use drugs; he could not travel selling glasses unless he had a place of business and was registered. No unregistered person was allowed to test sight. Anyone, however, could sell glasses. There was nothing to prevent anyone going into a shop and picking out a pair of glasses which might suit him. The point was that no unregistered person was allowed to give advice about glasses.

Sir James Barrett (Melbourne) said that he was chairman of a special committee set up to meet the opticians in Melbourne and to discuss the matter. He said that he had told them that sight testing was wrong in principle and practice and that they would have nothing to do with anything apart from the actual fitting and making of glasses. He mentioned that there were some university authorities who wished to introduce something in the nature of a diploma in optometry. He deprecated such a scheme and especially the action of some professor of physics who looked upon the eye as only made up of certain curves. He pointed out that it took ten years to make a competent ophthalmologist, six years' medical course, two years' hospital experience of general work and two years' special eye work. He thought that the treatment and prescribing of glasses for myopia in children by opticians was greatly to be condemned. Children got glasses that they could see with and their cases were not properly investigated. He thought that there was no ojection to the registration of dispensing opticians and the medical profession would be willing to cooperate with opticians to promote scientific training and registration of such.

Dr. H. F. Shorney (Adelaide) said that the course of instruction which was given in the University of Adelaide consisted of a three years' course, first year devoted to optics and light and so forth. The second year was devoted to elementary anatomy and physiology of the eye. When the optical society wanted to add training in the use of the ophthalmoscope and the recognition of diseases of the fundus, he refused to sanction it. The matter remained at that stage and would probably come up for further discussion.

Dr. A. J. Hall (Dunedin) thought there would be no objection to the registration of dispensing opticians, but a board should be appointed to satisfy itself that those applying for registration were competent dispensing opticians.

Dr. A. G. Talbot (Auckland) doubted whether much could be done by the registration of opticians.

After discussion the following motion was proposed by Dr. Harty and seconded by Sir James Barrett:

> That this meeting is of opinion that since a medical and special training is required, (i.) it is not in the public interest to register and recognize sight testing or consulting opticians as such; (ii.) there is no objection to the registration of dispensing opticians and the medical profession would cooperate with the opticians to promote scientific training and registration of such.

The motion was carried.

Dr. A. J. Hall (Dunedin) gave a lantern demonstration of fundus diseases. In a preliminary statement he said that he wished to show a series of slides prepared for him by Head. They were intended to be used principally for instruction for medical students. In the out-patient department experience had shown that many months of diligent work were needed for a student to acquire sufficient facility in the use of the ophthalmoscope to recognize whether a fundus was normal or not. Under these circumstances it would be futile to talk to them about diseases of the fundus and expect them to remember them. He, therefore, thought that it would be a desirable thing to present an exact replica of what the opthalmoscope revealed in common conditions until the student was able to look for himself. In showing these slides he said that, although they were all ordinary conditions, they could be studied by all with advantage. An effort should be made by ophthalmologists in Australia and New Zealand to collect something more than mere written records. They should be able to provide Congress museums with pathological specimens and pictorial reproduction of ophthalmic conditions of interest collected by themselves from their practices. It should be possible in the larger cities to arrange for a skilled artist who should be trained to use the ophthalmoscope in order to get first hand impressions of the picture he had to portray, to produce permanent pictorial records.

Section IX.—Pædiatrics.

Hirschsprung's Disease.

In speaking on Hirschsprung's disease, Dr. R. B. Wade referred to Hurst's theory of achalasia or failure of relaxation of either the internal or O'Beirne's sphincter as the cause of the disease. Such a condition could be explained either by Gaskell's theory that the action of the sympathetic was to prohibit the motor contraction or that of Royle and Hunter that the action of the sympathetic was for the fixation of postural tone. It was noted as a preliminary observation that four out of five patients recently under review had increased knee jerks. After consultation with Dr. Norman Royle an operation had been devised, namely section of the white ramus from the first lumbar nerve to the first lumbar ganglion, of the visceral branches to the inferior mesenteric ganglion from the first, second, third and fourth lumbar ganglia and section of the trunk below the fourth lumbar ganglion. The result in three patients had been a relief of all symptoms, distension and visible peristalsis in all. He read his notes merely as a preliminary communication of a new method of treatment.

Dr. Norman Royle (Sydney) said that he regarded ramisection as a cure in Hirschsprung's disease. He had operated on a patient suffering from chronic constipation three years previously with complete recovery. In experiments on animals the spinal cord had been cut and the bowel and bladder dilated; the animal had died in three weeks from toxæmia, but if the sympathetic also was divided the animal lived indefinitely. He thought that achalasia was not the full explanation of Hirschsprung's disease. In fourteen cases of spastic paraplegia with chronic constipation the condition had been relieved by ramisection.

Dr. R. B. Wade (Sydney), speaking after Dr. Royle, said that many years before he had seen a patient with Hirschsprung's disease operated on to see if any obstruction was present. None had been found. When the stitches had been taken out on the usual day, the whole wound had gaped, the intestines had protruded and the child had died. In operating on these patients during the acute phase there was a tendency to sloughing and gaping of the wound. Death might also occur as a result of toxic inanition. Many patients with Hirschsprung's disease died in the early months of life without a diagnosis being made, the cause of death being toxic inanition.

A description was given of the dilatation into *sella turcica* of the third ventricle that occurred in cases of congenital internal hydrocephalus, in which the blockage was in the aqueduct or roof of the fourth ventricle. An operation based on Frazier's method of approach for pituitary tumours was described.

SECTION XII.—RADIOLOGY.

Reflex Dyspepsias.

DR. H. F. PRAAGST (Melbourne) restricted his remarks to two common forms of reflex dyspepsias, those caused by pathological conditions of the appendix and those caused by pathological conditions of the gall bladder. There were seventy patients subjected to opaque meal examination in whom the diagnosis of appendicitis was made as a result of this examination. The clinical diagnosis was gastric or duodenal ulcer in twenty-six, chronic appendicitis in twenty-five and gastric or colonic carcinoma in four. At operation sixty of the seventy patients were found to be suffering from some pathological condition of the appendix. It was important to render the appendix visible in the screen picture. In twelve patients the appendix was not detected on the screen. Tenderness over the situation of the appendix, or if the appendix was not filled by the opaque medium, in the neighbourhood of the caecum was found in forty of the sixty patients. Dr. Praagst stated that mobility and changes in shape and position of the appendix were useful signs, but caution was needed in the interpretation in view of the fact that there was a considerable degree of mobility of the normal organ. Stasis in the appendix and in the terminal portion of the ileum was noted in many of the patients. The recognition of stasis after the colon had become empty was a valuable diagnostic sign. Reflex signs produced in the stomach and duodenum at times masked the underlying lesion. Turning to pathological lesions of the gall bladder Dr. Praagst presented data concerning twenty patients who had been operated upon. In sixteen the X ray diagnosis proved to be correct; in two it was incorrect. Of the sixteen patients whose condition was correctly diagnosed, fourteen were suffering from some lesion of the gall bladder. In six a calculus was in the gall bladder, in two a calculus was in the cystic duct, in one there were calculi in both the cystic and the common ducts, in one there was an inflammatory condition secondary to carcinoma of the head of the pancreas and in the remaining four the gall bladder was in an inflammatory condition without calculi. Two of the patients had normal gall bladders. In two patients the condition was indefinite.

In reply to Dr. Myers, Dr. H. F. Praagst said that skiagrams of the gall bladder were taken twelve, sixteen and twenty-four hours after administration of the dye. Tenderness over the appendix itself varied, but the appendix was often felt when it was filled and it was possible to say whether tenderness was present at that site or not. Dr. Praagst usually used the bare hand in palpation.

Dr. W. R. Stowe (Palmerston North) remarked that Dr. Nott estimated the resistance of the human body as being equal to sixteen millimetres.

Dr. Praagst stated that a vulcanite backing on top of the aluminium screen prevented the rays from burning the back of the hand, but that any other glove than a heavy examining glove was quite useless in protecting the palm.

Dr. Stowe remarked that the question of the dye for the investigation of the gall bladder was a very important one. Martindale had sent out drugs at a reasonable figure, but some method had to be adopted to insure that the drug was active when it was received. He suggested importing it from Australia.

Dr. Praagst stated that in Melbourne they were using "Kerosol"; this was imported in small quantities at a time, so that it could be used as fresh as possible. It was made up in ampoules the contents of which could be put in a keratin capsule and he expected that that method would be satisfactory.

In reply to Dr. Argyle Dr. Praagst stated that stasis might occur in normal appendices. It was not of diagnostic importance by itself unless other signs were present.

DR. C. C. ANDERSON (Dunedin) in discussing the use of dyes for colecystography stated that Mr. White was the first to make use of this method in Dunedin; he had found it quite satisfactory. They were using the intraoral method, the drug being placed in capsules with stearin; this method was quite satisfactory.

DR. R. N. GUTHRIE (Christchurch) stated that he was very pleased to hear Dr. Praagst say that a pathological appendix could be palpated and tenderness could be located, as he had found surgeons who disagreed with him on these points. He had recently read an article in which it was stated that it was impossible to diagnose chronic appendicitis by radiological means. This he did not believe.

DR. S. S. ARGYLE (Melbourne) asked what the nature of the vehicle was which was used for barium meals. In reply Dr. Praagst stated that the first meal was a mixture of porridge and barium sulphate, while the second was a mixture of water and barium sulphate. This he found gave the best filling of the cap with least spasm.

Dr. Argyle deprecated the non-use of gloves while palpating under the screen; they should be used up to the last minute and removed when the appendix itself was to be palpated.

Examination of the Colon.

DR. D. F. MYERS (Wellington) read a paper on the examination of the colon with the use of the opaque enema. The patient was prepared by the giving of a cleansing enema on the evening before the examination and another four hours before the examination. A light breakfast of tea and toast was allowed after the second enema. The injection fluid comprised three level dessertspoonfuls of cornflour mixed with a little cold water and stirred into 0·85 litre of fresh milk and 0·34 litre of water. This mixture was boiled and stirred. To it was added 426 grammes of barium sulphate beaten to a cream in half a litre of water and the whole mixture again brought to the boil with constant stirring for two minutes. The enema was injected at 37·8° C. through good rubber tubing. The tip of the tube lubricated was inserted for about ten centimetres into the rectum under inspection. If necessary the sphincter was packed to prevent leakage. As long as the patient's muscles remained relaxed it was easy to carry out a satisfactory examination. The cooperation of the patient was essential. The screen was held in position and the diaphragm closed to expose only the rectum with the tip of the tube. When the tube was seen to be in position the enema was allowed to flow. The screen examination followed the inflow of the fluid and each part of the lower bowel was investigated with care and attention. Complete arrest not due to blocking of the tube meant that there was an obstructive lesion. After the screen examination was completed and the tube removed with as little escape of fluid as possible a skiagram was made on the Potter-Bucky table.

In reply to Dr. Praagst DR. F. MYERS (Wellington) stated that the height for the douche can[illegible]. Praagst emphasized the importance of keeping enemas should be one foot above the patient on account of the too rapid [illegible] of the colon.

DR. P. D. CAMERON (Wellington) stated that he used a hard vulcanite nozzle for irrigation. It did not have to be held and was of no discomfort to the patient. Dr. Stowe had noticed that reverse peristalsis was the cause of trouble in many cases. In examination of the pelvic colon which was always a difficult matter, he believed that he could recognize the sigmoid sphincter which appeared as a valve with double cusps.

In reply to Dr. Guthrie Dr. Myers stated that in his experience an enema of one and three-quarter litres (three pints) was sufficient for any patient, although Dr. Guthrie has used as much as three and a half litres (six pints).

X Ray Diagnosis of Duodenal Lesions.

DR. H. R. SEAR (Sydney) based his attempt to correlate the clinical signs with the radiological findings of duodenal lesions in five thousand private patients. He endeavoured to obtain accurate histories, particularly of the earliest symptoms. Approximately 10% of the patients referred to him with histories of gastric disorders had duodenal ulcers. The clinical histories suggested duodenal ulcer in over one thousand. Of 1,092 patients with hunger pains

four hundred and sixty-four had duodenal ulcer. Dr. Sear defended the employment of the term juxta-pyloric ulcer by pointing out that while the gastric ulcer occurred with equal frequency in males and females and duodenal ulcer was four times as common in males as in females, juxta-pyloric ulcer was twice as common in males as in females. He described the direct and indirect signs of duodenal ulcer. In doing this he referred to the seven propositions that had been enunciated by George. Screen examination was essential. It could be combined with manipulations. The deformity in duodenal ulcer consisted in the niche, the crater filled with barium, the defect, usually on the greater curvature, caused partly by spasm and partly by induration and cicatrization, retraction of the border of the lesser curvature and diverticular formation. The first essential was to fill the cap completely. Dr. Sear adhered to the two meal method. He disapproved of all mechanical devices for blocking the duodenum from below. The duodenal cap could be deformed by adhesions, by congenital veils, by pressure of other organs, by growths in the duodenum and by diverticula. Dr. Sear examined the distinguishing appearance of the deformity in each of these conditions.

Gastric and Duodenal Ulcers.

DR. H. A. MCCOY (Adelaide) described a method of radiological examination for gastric and duodenal ulcers which Carman, Scott and Vilvandré and Barclay had employed. About half a litre of an emulsion of barium sulphate suspended in water with tragacanth was taken and repeated after six hours. The first examination was made immediately after the first dose; the second and third examinations were made before and after the second dose respectively. Fluoroscopy was employed in order that the lesion in the stomach or duodenum might be seen in the outline of the organ. The rugæ were rendered visible by the manœuvre described by Scott as white-washing the walls of the stomach. Peristalsis was closely observed. Massage, if rough, gave rise to artefacts. All manipulations of the abdomen had to be conducted with gentleness. In dealing with the radiological signs of gastric ulcer, Dr. McCoy described the niche in the mucous, penetrating and chronic perforating types of ulcer. He also spoke of the characters of the so-called fleck. Among the indirect signs were the incisura, tenderness on pressure over the ulcer and the cross bar symptom. Tenderness was of little value. Fränkel's method of examining the stomach by Röntgen cinematography opened up a promising field. The commonest site of gastric ulcer was the middle third of the lesser curvature. Ulcers in the anterior or posterior surfaces of the stomach were difficult to detect. Ulcers of the greater curvature were extremely rare. Diverticula had to be differentiated from ulcer. Duodenal ulcers were of the stomach. About eight times as common as ulcer the organic and the spasmodic or physiological signs were the niche, the duodenum and stomach, hypermotility of the stomach and of the colon, tenderness on pressure over the duodenal cap. He concluded by recounting a rare case of perforating duodenal ulcer with fistulous communication between the stomach and duodenum.

DR. S. S. ARGYLE (Melbourne) exhibited a number of films dealing with the following bone conditions: von Perthes's disease with segmentation of the femoral head, Paget's disease with changes in the skull and commencing changes in the spine and slight thickening of the cortex of femur and tibia; a very early case of abscess in the femur, hydatid of the humerus, a hip joint condition which appeared very like a monarticular osteoarthritis, but which was healed, a tuberculous condition which had been active eight years previously and an undiagnosed condition. He discussed a case of a perfectly healthy man who in six weeks had become acutely ill and very dyspnœic; a skiagram of the lungs displayed what might have been taken for advanced tuberculosis. The sputum did not contain tubercle bacilli; but a pure culture of streptothrix had been obtained. The lungs cleared up rapidly on the administration of potassium iodide. This case was discussed to illustrate the necessity of a full clinical history of every patient sent to the radiologist.

MONDAY AFTERNOON, FEBRUARY 7, 1927.

COMBINED MEETING, SECTIONS IX. AND XII.

Pulmonary Tuberculosis in Infants and Children.

DR. G. J. BLACKMORE (North Canterbury) read a paper on pulmonary tuberculosis in young children. He said that lung tuberculosis did not differ greatly from the same disease in adults so far as its signs, symptoms and treatment were concerned, but that the prognosis was less favourable. In regard to the family history he pointed out that all lung tuberculosis was due to human infection. The child was nearly always infected in its own home and hence great attention should be paid to the family history and to infection by persons other than immediate relatives. There was one sign that should always suggest tuberculosis, and that was the presence of numerous, small, palpable glands in the triangles above the clavicles. The use of tuberculin was important in diagnosis. Infection in young children could be proved by the use of von Pirquet's or Moro's test, but the lesion might be quiescent in spite of the presence of a reaction. To prove the presence of active disease in the lungs it was necessary to make use of hypodermic injections of Koch's old tuberculin. Dr. Blackmore discussed the question of prophylaxis. He regarded milk infection as of great importance as a cause of surgical tuberculosis in children, but not as far as lung tuberculosis was concerned. Human infection accounted for 75% of all tuberculosis in children. It was becoming clearer that tuberculosis was essentially a disease of childhood. Adult tuberculosis represented the fruit of a plant whose seed was sown in early life. Something then must be done to immunize the child against infection. The only method so far put forward which seemed to hold out any promise of success was that of Calmette and nothing very definite could be said about it. Dr. Blackmore then discussed what could be done in the place of active immunization. He referred to the work of the home for children of tuberculous parents in Christchurch. Most of the children were infected with tuberculosis. They were made to live in the open air day and night. The prophylactic action of sunlight was obtained by the exposure of the body to the sun and tuberculin was used on account of its detuberculizing action. In conclusion Dr. Blackmore pleaded for the establishment of more homes on the same lines.

DR. H. W. PALMER (Sydney) read a paper on pulmonary tuberculosis in children. He said that, if primary tuberculosis in children were more susceptible than adults or if when they were affected, the disease was more rapidly fatal, it would be expected that the death rate would be high for that age, but this was not so. A well formed child at birth had a good chance of developing, if its surroundings were good, even though its mother was suffering from open tuberculosis. He quoted figures to show the danger of leaving such children in their homes. He then went on to describe the early physical signs and symptoms of pulmonary tuberculosis in children and said that diagnosis was easy if tubercle bacilli could be found in the sputum. In the absence of such evidence all other factors had to be carefully considered. The family history, the presence of enlarged glands and the results of X ray examination were important. Broncho-pneumonia, however, that did not clear up, was suggestive, especially if relapses occurred at the original sites. The use of tuberculin for diagnosis was not without danger. The first dose for diagnosis should be the optimum dose to produce a reaction, a weaker dose sensitized the tissues, so that when a second dose was given a reaction might be obtained in a person not suffering from tuberculosis. Tuberculin also caused reactions in other diseases, such as measles, whooping cough and sarcoma. Von Pirquet's test was admittedly unreliable. In discussing preventive treatment Dr. Palmer said that it should eliminate risk and increase the individual's resistance against infection. The points he emphasized included the danger of exposing a child to any chance of virulent or massive infection, the importance of healthy home conditions, hygienic school surroundings, the elimination of tuberculous cattle and the production of artificial immunity. Many points had to be settled before Calmette's

claims could be accepted. Until a suitable immunizing agent was found, they would have to rely on notification, supervision and the separation of children from sources of infection.

DR. C. C. ANDERSON (Dunedin) read a paper on pulmonary intrathoracic tuberculosis in children. He pointed out that in examinations of children's chests with X rays it was easy to lay undue stress on mottling which was due to non-pathological processes. It was difficult to distinguish early pathological appearances from the normal or average chest. The literature on the subject was not very helpful. One set of observers laid stress on bronchoadenopathy and another declared that lesions usually commenced in the lower lobe and spread centripetally to the hilum. Ghon had shown that the primary focus in children might occur in any part of the lung. Normally the root shadows which were due principally to the shadows of the blood vessels, appeared as two crescents separated slightly from the median shadow by a narrow clear space, the lower horn of the crescent being more elongated and prolonged obliquely downwards and outwards. Any infection of the hilar glands would reveal itself by an alteration in the shape of these shadows and in obliteration of the narrow clear space. Dr. Anderson then showed a series of skiagrams and read notes of cases to show various points of importance. In one series the difficulty of diagnosis in early cases was demonstrated. He also drew attention to the differences between juvenile and adult chests. Typical enlarged glands at the hilum were also shown and Dr. Anderson said that the type of tuberculosis seen in New Zealand was more acute than that seen in parts of the old world. It was but natural that the radiographic appearances would be difficult.

DR. T. MCKIBBIN (Wellington) in opening the discussion said that the point which concerned hygiene most was bovine tuberculosis; it was still under consideration. The bacteriologist held that there was a clear demarcation between bovine and human tuberculosis. In England about 30% of deaths from tuberculosis were bovine in origin. In New Zealand dairy experts held that tuberculosis was lessening among herds; clean milk was, however, still important in prevention. It should be an easy matter to test whether milk was clean; for example, milk could be taken from the supply and injected into guinea pigs and rabbits. It could then be seen whether any tuberculosis was present.

DR. BRUTON SWEET (Auckland) said that bovine tuberculosis was of great importance in infancy and childhood. He held that a great percentage of tuberculosis was bovine in origin, more so than was usually given in the figures of investigators. He was convinced that the majority of young children were infected through milk. He raised the question of how prevention could be carried out. Was it by sterilizing milk effectively? Home pasteurizing for ten minutes was insufficient to kill tubercle bacilli as in humanized milk prepared in the home. In England, although Grade A milk was tuberculin tested, in hospitals Grade A milk was boiled before use. He uttered a warning against milk.

DR. C. E. W. LYTH (Dunedin) pointed out that he had found in Dunedin a number of cases of bone and joint disease in children whose parents, one or both, were tuberculous. He stated that a great percentage of surgical tuberculosis in children was human in origin, at least around Dunedin. He held that the von Pirquet test was not dependable. He had used Moreau's ointment to a certain extent in children who had been contacts, but the reaction was very uneven. He questioned whether it was a percutaneous or subcutaneous method. In Australia dry pleurisy had been pointed out as common in children. In New Zealand pleurisy with effusion was more in evidence.

PROFESSOR C. E. HERCUS (Dunedin) referring to the amount of bovine tuberculosis said that surmise was no good; experience and trial only were to be relied on. In Dunedin all material sent in had been investigated. All pulmonary tuberculosis had been found to be human: regarding bone and joint tuberculosis more samples were needed for investigation. He agreed with Dr. Palmer in his attitude concerning tuberculin, but disagreed as to the unreliability of the von Pirquet test; a reactor usually harboured a lesion. The tuberculin reaction was not a filter separating the vulnerable to tuberculosis from the invulnerable. It was of value in diagnosis. The tuberculin reaction was an anaphylactic reaction, the antigen being the tubercle bacillus. He would rather fall into the reactor group than into the non-reactor group, for the former was already immunized towards tuberculosis. Some of his best students had yielded strong reactions, a measure for congratulation. The non-reactors should be dealt with and immunized against tuberculosis, not the reactors as in Moreau ointment investigations. It was better to proceed on the above lines than to sterilize milk and protect the baby. Let the baby and the child protect itself by making its own immune bodies by means of a sublethal dose. In regard to milk he pointed out that 60° C. for twenty minutes certainly killed tubercle bacilli. He thought that the bacillus of Calmette-Guérin might be one day given as a routine vaccination against tuberculosis, a hopeful measure for the future.

DR. HARVEY SUTTON (Sydney) stated that while school examinations revealed tuberculosis in the schools, some might be missed in the homes. Out of 75,000, twenty-five had pulmonary tuberculosis according to recent school figures. Of these 50% had pulmonary tuberculosis in the home. He was firmly convinced that the massive dose must be avoided. The problem was to deal with the open case, the patient with a chronic type of tuberculosis, who returned to his family to infect his children by means of the massive dose. The Federal Government recommended paying the family compensation while the father was kept away until cured.

In regard to bovine tuberculosis he personally recommended the drinking of fresh milk. He had had many samples examined in Australia and had not found tubercle bacilli, but he believed in tuberculin testing of herds. Bovine tuberculosis certainly was a problem in connexion with children under the age of five years. In the prophylactic measures quoted in the papers read 1,200 reactors had been treated in the schools. He considered 1,200 non-reactors should also have been treated as controls. He agreed with Dr. Hercus that the Moreau method was not the best, but he thought that it should be tried. He would prefer to see a direct attack on malnutrition in children. The school was the starting place for early adult tuberculosis. Children must be taught hygiene and brought up to a good physical standard. He was afraid of the alarmist attitude of detuberculizing children as a whole.

DR. JEFFERIS TURNER (Brisbane) considered that slight infection of children in childhood was not harmful but beneficial, immunity being established. Heavy infection —the massive dose—was certainly harmful. He wondered if the children of the open air home quoted by Dr. Blackmore were improved by the Moreau inunction or by the *régime* of the home, the open air and sunlight. He considered that control should have been used.

Dr. Blackmore in reply said that great differences of opinion had been expressed during the discussion. The question would have to be decided by each person for himself. In answer to Dr. Hercus he pointed out that the most modern work showed that a patient with pulmonary tuberculosis with cavitation died as a result of his immunity.

Dr. Palmer in reply said that it was hard to tell when the response to the von Pirquet test was specific. Active and chronic tuberculosis were not differentiated by the test. Regarding bovine tuberculosis all cows reacting to the test were not suffering from active tuberculosis and it was only cows with active lesions which should be destroyed. Sterilizing milk was a protective measure. Boiled milk with a little orange juice was an adequate and safe food.

SECTION II.—SURGERY.

Bladder Tumours.

MR. R. GORDON CRAIG and DR. R. K. LEE BROWN (Sydney) contributed a paper on the surgery of epithelial bladder tumours. In the first place they traced the history of the

surgery of these tumours and showed that up to the beginning of the twentieth century the results of surgical treatment were bad. There was no real difference between innocent and malignant tumours of the bladder, they were both based on the same fundamental process of cell activity. The classification of Broders into four degrees of malignancy was acceptable. According to this classification the grade of malignancy depended not so much on the general form of the growth as on the proportion of differentiated cells resembling normal bladder epithelium, to the undifferentiated spherical and undifferentiated irregular cells with prominent nuclei. Thus if 25% of the neoplasm were undifferentiated, the malignancy was of one degree, if of 50%, the malignancy was of two degrees and so on. The authors then discussed the diagnosis of bladder tumours and explained the way in which hæmaturia was caused. They drew attention to the importance of the recognition by the public of the significance of blood-stained urine. If growths of the first and second degree of malignancy were recognized early, surgery could hold out good hopes of a cure. The results of diathermy were good, but cure was not complete when the operation was over. Repeated examinations should be carried out for a period extending over five years. The results of wide excision in tumours of the third and fourth grades were not so satisfactory as those of diathermy. They had not had experience of good results withh X rays and radium and thought that the position of these agencies had yet to be defined.

DR. S. HARRY HARRIS (Sydney) stated that simple papillomata of the bladder were not definitely palpable in bimanual examination. Infiltrating palpable tumours were not amenable to diathermy and gave bad results even with the widest type of excision unless freely removed. Such growths though sometimes apparently cured by intravesical methods, had at an early date shown evidence of intravesical recurrence. The treatment of noninfiltrating papillomata, even if malignant, he considered a matter very largely of cystoscopic technique. In his experience these, even when large or multiple, almost without exception yielded to diathermy. His experience of X ray and radium treatment had been a very disappointing one.

DR. GORDON CRAIG replied that up to five years previously he had not used cystoscopy. The information obtained with the cysto-urethroscope enabled him to judge of the best type of operation to use. If there was difficulty in passing the instrument, he refrained. Any bleeding points, such as occurred at the prostatic bar, were arrested by a diathermy electrode. By doing this he had saved many a patient from a preliminary suprapubic cystotomy.

Suprapubic Prostatectomy.

DR. S. HARRY HARRIS (Sydney) gave a moving picture demonstration of his operation of suprapubic prostatectomy which permitted a complete visual exposure of the operative field through a three to three and three-quarters centimetre (one and a quarter to one and a half inch) incision. He reported a series of two hundred and forty-five operations performed during the past five years with seven deaths, a mortality rate of 2·8%.

He demonstrated the value of complete visualization of the bladder neck and emphasized the importance of trimming and suture of the raw surfaces left after prostatectomy without which no operation could be considered complete.

Dr. Harris also showed some lantern slides of a new and original method of suture of the bladder neck which he had only recently devised. This made possible the obliteration of the prostatic cavity and he hoped would eventually permit of complete hæmostasis and covering up of the raw surfaces by approximating the mucous membrane of the bladder neck to the stump of the prostatic urethra. The ideal operation of complete closure of the bladder without suprapubic drainage would then be brought within the region of practical surgery.

DR. J. T. TAIT (Melbourne) wished to express appreciation of Dr. Harris's most interesting illustration of his operation and to congratulate him upon his results. There were cases of prostatic obstruction which caused much anxiety and those that could with safety be operated upon in one stage, could be separated from those requiring a two-stage method.

With careful pre-operative treatment an increasing number of patients could be operated on in one stage. Among eighty patients in consecutive order at St. Peters Hospital, London, sixty-five (82%) were operated upon in one stage and fifteen (18%) in two stages. The disadvantages of removing the prostate after the bladder had been drained for some time, were difficulty in getting free exposure and tendency to the occurrence of omental hernia, even if complete resection of the scar was carried out at the time of the second operation.

The method of most value in pre-operative treatment was continuous drainage of the bladder by means of a tied-in catheter, used for all patients with complete retention or a residual urine of more than three hundred cubic centimetres (ten ounces). The catheter was usually kept in position for seven to ten days before operation and through it gradual decompression of the bladder could be easily regulated.

The renal function improved as shown both clinically and by chemical tests. The urea concentration test was used in conjunction with the estimation of the blood urea. A gum-elastic catheter was used for all prostatic patients. It was simply fixed and caused the patient little trouble save a mild nephritis. To be efficient it must be carefully watched and adjusted by the surgeon or a specially trained nurse.

There were still too few early cases, owing to the significance of the symptoms not being realized by patients or their medical advisers. The most important fact in deciding upon operation was the presence of the residual urine. A persistent residual of sixty to one hundred and twenty cubic centimetres (two to four ounces) should indicate an operation. Delay caused a long period of anxiety for the patient and increased the gravity of any operative procedure.

After catheter drainage the temporary effect upon the kidneys passed off. Many patients were in fair clinical condition, though the results of the function tests might be very unsatisfactory. The indications for preliminary cystotomy which could be done under local anæsthesia, were severe infection and when advanced chronic disease of the kidneys was present. These were the dangerous cases and drainage might be necessary for a very long time. The cardio-vascular condition was bad and the patients suffered from severe dyspepsia. Two patients had been drained for twelve months and another one died after a prostatectomy which had been done nine months after the preliminary cystotomy.

He confessed that he favoured the large incision. The whole hand could be introduced through the abdominal wall; this gave more control over the manipulation in the prostatic cavity and enabled the surgeon to avoid the use of a finger in the rectum.

A small and adherent prostate demanded a wide opening of the bladder so that the prostate might be removed by open dissection. The method employed was partial enucleation by the finger and completion of the prostatectomy by scissors and forceps.

Operative shock was caused by dragging and tearing and was reduced by working through a large incision.

In the case of very large prostate it was difficult to remove the prostate from the bladder through an incision 2·8 to 3·2 centimetres (1¼ to 1¼ inches). Its risk of sepsis in the wound and of hernia was very slight with careful closing of the wound. Among sixty-five patients for whom a one-stage operation had been performed, there had been three deaths which was equivalent to 4·6%. These patients did not die from uræmia, sepsis or hæmorrhage, but from factors incidental to a major operation in patients of advanced age. The mental attitude of the patient was important. Many went to operation convinced that they would not recover.

In the cases in the second group in which the two-stage method was necessary, death had occurred mainly from

suppurative pyelo-nephritis. The patients had come to hospital too late and no method of treatment would have saved them.

MR. CAMPBELL BEGG (Wellington) drew the attention of members to an accident recently reported in the *Journal d'Urologie* in which an explosion occurred in the interior of the bladder during the progress of a fulguration. The current in use at the time was 600 milliampères. Until the actual cause of this was ascertained, it might be as well to refrain from using currents of high ampèrage in the closed bladder.

It was interesting to dwell upon the peculiar types of growth found in the bladder, the lower part of which was of mesothelial origin while the upper was endodermal. In both squamous epitheliomata considered typical of epiblast were found as well as adenomata of the intestinal type containing goblet cells.

The latter often took their origin in the lower end of the urachus which contrary to the usual teaching retained a very active epithelial core throughout life. The urachal cells which were derived from the ventral cloaca, were restless in their cramped environment and in a large percentage of apparently normal persons were found to have pushed their way into the stroma to form columns of cells which acquired lumina by central degeneration. These adenomata sometimes assumed malignant characteristics and broke into the bladder forming the well-known adenomata of the vault.

The practical application of this fact was that it indicated the free removal of the urachus and the surrounding tissues when a growth at the vault of the bladder was being resected.

MR. GORDON CRAIG (Sydney) said that while he admitted the advantages of a large vertical incision, he had found that it delayed convalescence and increased the liability to suprapubic extravesical sepsis. For these reasons he had abandoned it and had evolved practically the same technique as Dr. H. Harris, namely a transverse skin incision with a vertical incision of the muscles. A glass drainage tube was used. The most important step of the operation was the toilet of the vesical neck. Hæmorrhage from the prostatic space was a real danger. He controlled it when necessary by means of ligature of the bleeding points applied by means of a curved needle and suitable needle holder. The space was packed with a strip of plain unmedicated gauze. In the majority of cases this gauze packing was unnecessary. When used it should be removed at the end of twenty-four hours. In one case in which the gauze had not been removed early, death followed on the fourth day from pulmonary embolism with the gauze still in position. Thrombo-phlebitis of the prostatic plexus of veins had in his opinion been induced by the prolonged packing with gauze.

A late complication of cicatricial contraction of the vesical neck was a very real danger unless the removal of all redundant tags of mucous membrane was carried out in the toilet of the vesical neck. Some of these cases could be dealt with by dilatation with suitable bougies passed through a cysto-urethroscope.

Sepsis after operation was not controlled by suction, but by washing out the bladder by Janet's method by means of a hundred cubic centimetre syringe fitted with a suitable nozzle to fit the urinary meatus. The solution used was 1 in 3,000 "Meroxyl," a synthetic mercurial antiseptic invented at the urological department of the Johns Hopkins Hospital. Weak boric acid lotion or permanganate of potash solution (1 in 5,000) was also useful.

The factors governing mortality were not all in the technique of the operation. For the past five years a careful investigation by cystoscope of the prostatic enlargement was carried out as a routine in all cases. The cystoscopic appearance of the intravesical enlargement governed the type of operation. If the obstruction proved to be of the prostatic bar type, then it was removed by a Young's punch. The hæmorrhage was controlled in this operation by a diathermic electrode applied to the bleeding point through a cysto-urethroscope. Renal function was also tested and measures were taken to improve it by an indwelling catheter in some cases that did not respond to this method. Suprapubic drainage was established, followed by a secondary operation at a later date. After treatment was also an important factor in mortality. If asked to express the importance of the various steps in treatment in percentages, he would say that preoperative treatment and investigation would be 75%, the operation 15% and after treatment 10%.

DR. J. A. JENKINS (Dunedin) felt that the ground had been so well covered there was not much left to say, but the question of anæsthesia had not been discussed and it was a very important one, as an ill chosen anæsthetic was one of the chief causes of mortality and morbidity. Spinal anæsthesia was one of the methods of election and he had found that low spinal together with abdominal field block was most useful. He did not like gas and oxygen. He thought that the suprapubic approach gave the operator better control over difficulties. The important features of the operation were a wide exposure through a vertical subumbilical incision, free stripping up of the peritoneum from the bladder, thorough treatment of all raw surfaces with bismuth-iodoform-paraffin paste, free exposure of the interior of the bladder by self-retaining retractors, a circular incision surrounding the internal meatus. This was deepened until a plane of cleavage was met internal to a rather dense fibrous capsule. Enucleation of the prostate should be carried out with finger or blunt dissection, the gland being drawn up with traction forceps. The overhanging flap of mucous membrane and capsule should be punched out. All bleeding vessels should be controlled, the cavity should be treated with bismuth paraffin paste, the cavity should be packed with gauze around a rubber catheter left in the urethra and the gauze brought out through the suprapubic opening. Lastly the bladder should be closed except for a drain the size of the little finger. The application of bismuth-iodoform-paraffin paste to the prostatic cavity lessened sloughing, sepsis and epididymitis. The gauze and the catheter were removed within the first thirty-six hours and suprapubic suction with the Geissler water pump was carried out for three to five days. From the fifth day a special suction cut was applied, which Dr. Jenkins demonstrated. When the prostate was fibrous and could not be enucleated, the gland could be punched away with a Hartmann's cochotome. He mentioned a few points in connexion with complications. Reactionary hæmorrhage was one of the chief causes of death. A small hæmorrhage within a few hours of operation had an effect out of all proportion to the quantity of blood lost. Retention of clot in the bladder had an intensely depressing effect and attempts to remove it a more evil one. Pulmonary complications could be treated only by careful nursing. The method of anæsthesia was important. Attention to adequate support of the testis helped to prevent epididymitis. Ligation of the base seemed to be the only certain way of preventing this. Pyelo-nephritis was lessened by forced fluids and alkalis. Uræmia was probably one of the least understood of all renal conditions. It could be induced by several separate factors. No one test or group of tests done before operation could exclude its onset after operation. Renal function tests did not always indicate its near presence. Dr. Jenkins quoted an interesting case in which the renal function according to the phenolphthalein and total non-protein nitrogen tests appeared to be normal, but the uræmic symptoms appeared the morning after operation. The patient had been transfused with a litre of blood and half a litre of 10% glucose solution. After this he had become conscious in an hour. The factor which appeared to have precipitated the coma, was a sudden fall of blood pressure. He believed that in acute or chronic cases of retention of urine it was better to employ suprapubic drainage under local anæsthesia if the ordinary methods of treatment failed. The important thing in decompressing a distended bladder was to remove a small quantity. A large number of patients were admitted to hospital too late, many patients were killed by unskilled attempts at catheterization.

DR. B. KILVINGTON (Melbourne) said there were two types of fibrous adherent prostate, one the fibroadenoma and the other the scirrhous carcinoma. He never attempted

to remove this digitally, but used a special punch. A good exposure was necessary. He cut a funnel-shaped passage through the prostate, while his assistant kept his finger in the rectum to guard the progress of the punch. These patients passed urine quite well. There was not much bleeding. There were no frayed pieces of tissue to necrose and become infected. The pieces were examined microscopically and if malignant changes were found, radium was applied and later X ray treatment was given to shut off the lymphatics. Urinary obstruction was relieved and life prolonged thereby.

MR. H. B. DEVINE (Melbourne) wished to ask Dr. Harris if he attached any importance to early closure of the fistula with relation to thrombosis. He liked to keep the bladder open for two weeks or so. He had used suction for twelve years. It was a most important part of the postoperative treatment. The large quantity of air passing through the bladder kept the wound clean. He fixed the suction tube just down to but not into the bladder.

SIR GEORGE SYME (Melbourne) had performed prostatectomy for the first time thirty years previously. He congratulated Dr. Harris on the demonstration of his methods. There had been no mention of perineal prostatectomy for the hard fibrous prostate. He supposed it was due to the introduction of punches. When there was a possibility of malignant disease, a better exposure could be obtained through the perineum and was preferable. There were risks, such as damage to the rectum. He had experienced recurrent hæmorrhage after leaving the bladder perfectly dry at the end of the operation; he always found it safer to plug the cavity. The use of a sucker improved the after treatment. Except for the first twenty-four hours while the tube was in position, he used the sucker in the wound. Functional tests were useful, but not absolute and they should be prepared for any emergency. Nobody had mentioned cystoscopy before operation; what was the value of this?

DR. S. HARRY HARRIS in his reply stated in answer to Dr. Tait that if sufficient time were left after a preliminary cystotomy, the technique which he described was applicable also to a two stage procedure, but instead of the transverse incision a vertical incision 2·5 centimetres (one inch) in length was employed downwards from the cystotomy opening. With reference to the delivery of a large prostate through a small incision this must be effected like a fœtus in its long axis, the anterior commissure of the prostate if necessary being broken through. Dr. Harris was interested to hear that Dr. Gordon Craig had abandoned the large vertical incision and had become a convert to the glass bladder drainage tube which he, Dr. Harris, had been using for so many years. There was no question of the fact that the toilet of the bladder neck was an essential part of the operation and in the light of their present knowledge, no operation could be considered complete when adequate trimming and suture of this region had not been carried out.

In answer to Mr. H. B. Devine, Dr. Harris stated that he thought the earlier the fistula closed, the better for the patient. He thought that the complete closure of the bladder after operation, if this were possible, would be the ideal operation and he hoped that they were in measurable distance of this.

SECTION III.—OBSTETRICS AND GYNÆCOLOGY.

The Trial Labour.

PROFESSOR J. C. WINDEYER (Sydney) read a paper on the indications for and the management of the trial labour. He quoted Aleck W. Bourne's definition of a trial labour: "A term used to denote a labour which is being closely watched with a view to terminating it by Cæsarean section should the head not show signs of engagement and descent." Professor Windeyer discussed the points raised by this definition. The conditions that might necessitate a trial labour, were first of all contraction of the pelvis and then oversize of the fœtus and cicatrices of the soft parts. Pelvimetry should be performed early in all *primiparæ* and in all *multiparæ* whose history was not a good one. It was difficult to say what degree of pelvic contraction indicated Cæsarean section, as in the great majority of cases the size of the passenger had to be taken into consideration. It might be stated roughly, however, that a conjugate diameter of the brim of the pelvis of less than 8·75 centimetres contraindicated a trial labour. In contraction of the outlet it was more a question of deciding between a Cæsarean section before or at the commencement of labour and a spontaneous or operative delivery by the vagina rather than upon a trial labour to be followed by a Cæsarean section if it failed. Oversize of the fœtus could be detected by inspection, palpation and mensuration. X ray examination might be of service. The relationship of the head to the brim of the pelvis could best be determined by abdominal methods of palpation. When it was decided to undertake a trial labour, abnormal presentations and positions should be rectified before labour began. Risk to the mother should be removed by avoidance of mechanical methods of induction, by the adoption of abdominal methods of palpation and by rectal instead of vaginal methods of examination. In regard to attempts to deliver by forceps before performing Cæsarean section it should be remembered that such attempts added very greatly to the risk of section. It was necessary to be sure of success before undertaking this additional risk. For many years he had advocated eight or ten hours trial labour before Cæsarean section was undertaken in a *primipara* and he had seen no bad results from this method of treatment. Professor Windeyer concluded by saying that if the medical attendant had any doubts in his mind about his competence to decide questions of disproportion and so forth, he should seek the aid of a more competent obstetrician.

Pubiotomy.

DR. H. BONAR LINDSAY (Christchurch) read a paper on the operation of pubiotomy. He pointed out that some authorities regarded the operation as a prophylactic operation and some looked upon it as an emergency measure only. Cases for pubiotomy could be divided into two groups. In the first group pubiotomy was indicated as an emergency measure because the disproportion was too great to be overcome by the natural forces or by forceps. With perfect antenatal care this group would cease to exist, but such cases occurred in actual practice and the available procedures for delivery were three. These were low Cæsarean section, craniotomy and pubiotomy. Pubiotomy was in these cases an alternative to craniotomy rather than to Cæsarean section, because the time suitable for the latter operation had passed. In the second group of cases into which cases for pubiotomy could be divided, the presence of a contracted pelvis had been recognized during pregnancy. The available methods were induction, Cæsarean section and pubiotomy. The advantages of pubiotomy were four in number. First, it was a procedure that did not necessarily require repetition. Second, it was a simple procedure that could be leisurely performed in fifteen minutes. Third, the maternal mortality was low. Fourth, the fœtal mortality was low. The disadvantages of the operation were three. First, hæmorrhage might occur during the operation. Second, a vaginal tear might open up a path of infection to the sawn ends of the bone and infection of the venous plexuses might lead to femoral thrombosis. Third, it had been alleged that interference with walking occurred. He had not had any such experience and Jellett had not reported such an occurrence. While greater antenatal care would reduce the necessity for pubiotomy as an emergency measure, the converse was true of the prophylactic operation. Antenatal examination could reveal the presence of a degree of contraction suitable for radical cure and the field for pubiotomy would thus be increased. Dr. Lindsay concluded his paper by giving details of several cases in which he had performed pubiotomy and illustrated his remarks by skiagrams.

DR. A. M. WILSON (Melbourne) congratulated Dr. Bonar Lindsay on his paper and said that he would certainly try prophylactic pubiotomy on his return. He had once torn the vagina while doing an emergency pubiotomy. In one patient callus had grown internally and obstructed the following labour. This experience had deterred him

from trying the operation. With the trial of labour the attempt should not be considered complete unless the membranes had been ruptured for two or three hours. In Melbourne they make one or two vaginal examinations during the labour. In border-line cases the condition of dilatation of the cervix was noted. If it was dilated after the rupture of membranes, labour would proceed; if it was not dilated and if there was extension of the head, Cæsarean section would probably be required. Careful asepsis of the hands was necessary.

DR. J. W. DUNBAR HOOPER (Melbourne) asked for information concerning the suture material employed in Cæsarean section and whether morphine in small doses in trial labour was permitted. He also asked how long after pubiotomy it was necessary for the patient to rest.

DR. C. NORTH (Dunedin) asked if there were any statistics of the rupture of the scar after low cervical Cæsarean section.

DR. HENRY JELLETT (Christchurch) said that he had written a paper entitled "The Radical Cure of Pelvic Deformity" which had been published in *Surgery, Gynecology and Obstetrics* (August, 1919). He had advised the operation as a prophylactic one. He wished to emphasize the teaching that pubiotomy was not merely a method of terminating a difficult labour; it was rather a means of effecting a radical cure of pelvic contraction. Pubiotomy was indicated in both the first and second degrees of contracted pelvis. Pubiotomy was not an alternative to Cæsarean section any more than was the wiring of a fractured bone an alternative to amputation of the limb. Pubiotomy should never be postponed willingly to the end of the second stage, but should ideally be carried out independently of pregnancy when its effects were likely to be required. Every effort should be made to prevent bony union of the cut surfaces. He considered that a woman after pubiotomy should have the maximum amount of movement. Bony union was not desired. He concluded by saying that he regarded Professor Windeyer's remarks with veiled hostility.

DR. MARY DE GARIS (Geelong) read a short paper on uterine inertia.

PROFESSOR WINDEYER stated that in cases of low cervical Cæsarean section de Lee had reported two cases of rupture of the scar in a series of 320 operations. His method of abdominal palpation did away entirely with the necessity for any vaginal examination. If it was necessary during the trial labour to know the condition of the cervix, a rectal examination was all that was necessary. As regards the exhibition of morphine, he recommended small doses. For suture material he used thick, plain catgut. Rupture was due to incorrect coaptation of the edges of the uterine womb. The operation should be very accurate and careful in approximating the edges. He demonstrated his method.

DR. BONAR LINDSAY in reply said that Dr. Jellett had really replied to all questions. He wished to state that one of the disadvantages of pubiotomy was that the patient had to undergo an operation and later had also the delivery to look forward to.

SECTION IV.—PATHOLOGY AND BACTERIOLOGY.

Poliomyelitis.

DR. C. M. HECTOR (Dunedin) read a paper on poliomyelitis. He referred to the 1924-1925 epidemic as the worst experienced by New Zealand and to the report published in THE MEDICAL JOURNAL OF AUSTRALIA on May 1, 1926. He then described experimental work which had been carried out in Dunedin in continuation of that initiated in Wellington by Dr. P. P. Lynch. He gave protocols of experiments carried out on monkeys and said that he had tried to inoculate rabbits with virus in various forms. Tests for skin reaction had been made on monkeys and rabbits with known virulent suspension of spinal cord in the form of a filtrate and with Rosenow's antipoliomyelitic serum. No reactions had been obtained. He concluded that the virus had been present, but that its virulence was of a low order, not sufficient to give the rapid propagation of the disease required for the purpose of immunity test. Dr. Hector then discussed the nature of poliomyelitis and its relation to allied diseases. It was a member of the group of epidemic diseases of the central nervous system. Some of these diseases manifested increasing epidemic prevalence and severity. MacNalty offered various explanations for this: (i.) a lowered resistance of the central nervous system owing to modern conditions of life, (ii.) increased facility of infection by reason of modern transport facilities, (iii.) cyclical variation in the virulence of organisms, (iv.) new species of organisms and so on. *Encephalitis lethargica* had increased by leaps and bounds. Dr. Hector regarded cerebro-spinal meningitis, poliomyelitis and *encephalitis lethargica* as distinct entities, but thought that they might be related in the same way as typhoid and paratyphoid fevers. The important fact about poliomyelitis from an epidemiological point of view was that the disease might be and almost certainly was spread largely by patients with mild unrecognized infection and by contact carriers. In conclusion he referred to the work of Topley on experimental epidemiology (see THE MEDICAL JOURNAL OF AUSTRALIA, July 17, 1926) and to the work of Dudley on crowding in relation to infection (see THE MEDICAL JOURNAL OF AUSTRALIA, August 11, 1923).

PROFESSOR J. B. CLELAND (Adelaide) said that he wished to know if inoculation experiments had been carried out with other animals besides monkeys. There were many persons attacked by encephalitis in New South Wales in the dry interior and the question arose whether the infections were due to the same virus. He thought that it was a separate disease, for it seemed possible to convey the disease from monkeys to sheep. Recently experiments had been carried out in the course of which the disease had been transferred directly to sheep. The question was whether it was possible to convey the virus of anterior poliomyelitis to sheep. This had not been hitherto successful, because of the few attempts made. Inoculation into sheep had revealed many interesting points. If six sheep were inoculated, the following results might be expected. At the end of seven days two sheep might suddenly manifest symptoms, head retraction, inability to stand up, convulsions and death. *Post mortem* typical lesions of encephalo-myelitis were found. Two others might manifest indefinite symptoms, instability and slight twitching; the other two might have no symptoms at all. If these last two were inoculated in another series, they would be still refractory. This raised the question as to whether in an epidemic some members of the community did not harbour the virus in the central nervous system. He thought that many people became infected and that the virus reached the central nervous system without any untoward symptoms. It was uncertain whether the lymphocytic involvement caused the paresis or whether the reaction of the individual rather than the effect of the toxin of the virus produced the symptoms.

DR. A. H. TEBBUTT (Sydney) said that it was difficult to distinguish between the cerebro-spinal fluid of tuberculous meningitis and that of anterior poliomyelitis. A careful examination of the fluid was always made for tubercle bacilli and in a few instances these were found. The fluid in anterior poliomyelitis might contain a veil-like clot and a large number of cells. In anterior poliomyelitis polymorphonuclear cells were increased, while in tuberculous meningitis lymphocytes were increased. This, however, might not always be evident.

DR. C. M. HECTOR replied that with regard to Dr. Cleland's remarks he had not tried to inoculate sheep in his experiments. He had, however, tried to inoculate rabbits whose resistance had been lowered with large doses of morphine. In no case, however, did he get infection. He also gave *cannabis indica* to stimulate the cerebral circulation, but again he had obtained no infection.

No doubt some of the symptoms in anterior poliomyelitis were due to the œdema produced. When the œdema went down, some of the symptoms disappeared. There were many cells in a badly-infected area which appeared to be healthy and hence there was some recovery when the œdema passed off.

Dr. Jean Macnamara (Melbourne) read a paper on poliomyelitis in Victoria in 1925. An attempt had been made to obtain a supply of serum from the blood of persons previously affected by the disease. Efforts had also been made to awaken the interest of the public and of the medical profession to the importance of early diagnosis. Dr. Macnamara described the search for donors and the method of obtaining the blood. The names of patients notified as far back as 1917 had been obtained and a request had been sent for permission to obtain a quantity of blood. Personal interviews had frequently been required before consent was obtained. One hundred and ten persons, however, willing to give their blood, had been found Blood had been collected from the median basilic vein. The first few cubic centimetres had been used for the Wassermann test. It was considered a better policy to take a small quantity of blood which would not interfere with the ordinary life of the donor and to repeat the bleeding some weeks later if necessary. An effort was being made to record the change of address of these persons in case they should be needed in the future.

Dr. A. Jeffreys Wood (Melbourne) said that Dr. Macnamara had stimulated the Health Department in Melbourne and urged them to action in regard to the outbreak of anterior poliomyelitis. The City Council had appointed Dr. Macnamara to find out where serum could be obtained and where it could be put up in a suitable form for administration and had instructed her to be at the call of any practitioner who wished her to see a patient with anterior poliomyelitis. He had had only one patient. This was a small child of eighteen months which was quite healthy. It had suddenly lost its appetite and resented being disturbed. There had been some stiffness of the neck and spine and also some paralysis. Dr. Macnamara had been called in and immediate lumbar puncture had been performed and the number of cells in the cerebro-spinal fluid calculated. The diagnosis of infantile paralysis had been made and without removing the lumbar puncture needle serum had been injected into the theca. Serum had also been given into the muscles and veins. The child had begun to improve and in six months the weakness of the abdominal muscles had disappeared and no paralysis of the deltoid muscle remained. The action of the Council was to be praised; Dr. Macnamara had carried out most excellent and beneficial work.

A paper by Dr. F. C. Morgan (Melbourne) on the collection of blood from donors and the preparation of curative serum for use in poliomyelitis was read by Dr. J. Macnamara. It was important that the blood removed should be allowed to clot without the addition of any anticoagulant or other chemical substance. The reactions which occurred as the result of the injection of this type of serum, were reported to be due mainly to the occurrence of hæmolysis during clotting. Difficulty had been experienced from premature clotting of the blood within the needle and the rubber collecting tubes. Trouble had been caused by platinum iridium needles because they soon lost their sharp point. Rustless steel needles had been substituted for these of the common steel variety. The tendency for clotting to occur in the narrow rubber collecting tubes had been overcome to a great extent by immersing the apparatus in heated paraffin wax of a suitable melting point. The blood was allowed to stand over night and the plasma was removed. Clotting of the plasma was brought about by the addition of a solution of calcium chloride with a specific gravity of 1022. The serum had been rendered sterile by filtration through Pasteur Chamberland F candles. No antiseptic had been added in view of the necessity of administering it by the intrathecal route. The serum had been classified in groups according to the length of time that had elapsed since the donor was affected by the disease. Samples of serum of the same group were pooled and subsequently put into ampoules.

Dr. Jean Macnamara (Melbourne) read a second paper on the treatment of poliomyelitis by means of human immune serum. She reported the history of twelve patients treated by serum prepared at the Commonwealth Serum Laboratory from the blood of persons previously attacked by poliomyelitis. The twelve patients were divided into several groups according to the stage in which the serum was administered. One patient only in Group A received serum in the preparalytic stage. Two patients in Group B received serum within twenty-four hours of the onset of paralysis. One patient in Group C had a paralysis of the upper neurone type. Five cases in Group D received serum on account of fever, hyperæsthesia and probable further spread of paralysis after paralysis had been present for a period of thirty to fifty hours. Three patients placed in Group E were given serum in an attempt to save them from death by respiratory paralysis. The patients of Groups A, B and C had recovered completely. In no instance in Group D had further paralysis occurred, although in three instances this had been expected. Four of the children in this group had had good return of power, but it was impossible to decide how much was due to rest and reeducation and how much to the serum therapy. The three patients in Group E had survived. In no instance had any unpleasant reaction occurred. Dr. Macnamara claimed that, though this series was small, the results warranted a further use of this method of treatment.

Dr. E. H. M. Stephen (Sydney) said that his experience with cases of infantile paralysis and their treatment with serum was limited. The first child had had fever and signs of paralysis. Serum had been given intrathecally and intramuscularly and the child had recovered in a week. All the other patients had been in the paralytic stage before serum had been administered and these children had not shown any improvement. All the serum collected in Sydney had been obtained from young children.

Dr. A. B. Pearson (Christchurch) said that during the epidemic of infantile paralysis in New Zealand the wave showed a decreasing incidence from the north to the south. The infections, however, in the south were equally severe. There were many cases, undiagnosed, of vague illness which must have been anterior poliomyelitis. Lumbar puncture had been carried out in only a few instances. The examination of the cerebro-spinal fluid was a great help in diagnosis. The point raised by Dr. Tebbutt in regard to distinguishing between tuberculous meningitis and infantile paralysis had also been raised. The sugar content of the cerebro-spinal fluid was a great help. In anterior poliomyelitis there was generally no alteration, while in tuberculous meningitis it was always lower.

Convalescent serum had been used for treatment in doses of from ten to fifteen cubic centimetres. In the preparalytic condition with a high cell count the results were dramatic. In the fulminating infections nothing seemed to do any good. Serum had at first been given intrathecally, but later had been injected intravenously and intramuscularly. At the *post mortem* examination on some patients who had had intrathecal injection, he had noticed a gelatinous exudate which was extradural. He had thought that this was due to injection, but later had proved that this was not the case. There was often complete disorganization throughout the whole length of the cord. In fulminating infections the lesions were largely confined to the brain; these patients died with symptoms of acute bulbar paralysis. Until a few hours before death the children were quite well.

Dr. P. P. Lynch (Dunedin) said that he was pleased to hear Dr. Macnamara emphasize the importance of the examination of the cerebro-spinal fluid. In Wellington in 1925 many differences in clinical signs were noted among the first group of patients. Three to four weeks before it had been recognized that the patients were suffering from infantile paralysis, there had been much vague sickness amongst the school children in Wellington. Considerable help had been gained from the cerebro-spinal fluid. There was always evidence of inflammatory reaction. Great care had to be exercised in the interpretation of results. In some patients there was a high cell count and a turbid fluid and there was some doubt as to whether these were suffering from infantile paralysis or meningococcal or other coccal infection. The development of paralysis settled the diagnosis. Towards the latter end of the epidemic there had been the same variation. If there was any inflammatory reaction at all, serum had been given. One hundred to one hundred and fifty children had been treated by serum in Wellington and Dr. Robertson who had carried out a great deal of this work, had had no doubt whatever of the value of serum in treatment.

Dr. E. B. Durie (Sydney) said that she would be interested to hear something about the collection of serum in

New Zealand, since there had been more children infected with infantile paralysis during recent times in New Zealand than in New South Wales.

DR. A. H. TEBBUTT (Sydney) asked Dr. Macnamara how she satisfied herself that the fluid withdrawn before serum was given was from a patient with anterior poliomyelitis. He was glad that Dr. Pearson had mentioned the value of the sugar content in diagnosis. Woodhill in Sydney thought that this was an important factor and stated that it was either reduced or absent in tuberculous meningitis. With regard to the exudate found after intrathecal injection he said that aseptic meningitis from injection of horse serum was known, but he know of no cases from injection of human serum.

DR. JEAN MACNAMARA replied that she had tried to prove that each patient had been suffering from anterior poliomyelitis in the preparalytic stage before serum had been given. When she went to see a patient, she went prepared to do a lumbar puncture; she took a microscope and counting chamber and the necessary reagents. The child was first examined to determine the advisability of lumbar puncture. She thought that lumbar puncture was only justified when there was definite evidence of meningeal invasion—dislike of anterior flexion of the spine and restlessness. If these symptoms were present, a few drops of fluid were withdrawn and the obturator replaced in the needle. These few drops were examined immediately according to Draper's technique. Later a more careful examination of the fluid was made. There had been a history of whooping cough and sickness for some time before in four children; she had therefore refused to use serum and was quite justified in doing so as no paralysis developed. If the examination of the fluid yielded evidence of infantile paralysis, serum was given immediately.

She agreed with Dr. Stephen that the value of serum given after paralysis had set in was doubtful. She showed photographs of the child mentioned by Dr. Jeffreys Wood.

Localization of Streptococci.

DR. C. H. KELLAWAY AND MISS F. E. WILLIAMS (Melbourne) read a paper on the specific localization of streptococci. Rosenow had claimed to have altered the cultural characters and the specific localizing tendency of streptococci by repeated animal passage. Their communication was concerned with this aspect of Rosenow's work. Suitable organisms had been isolated from a number of patients with arthritis and nephritis in which on clinical grounds focal infection of the teeth or tonsils seemed to play some part. Cultures had been taken from the suspected foci into glucose-brain broth. Colonies of streptococci had been inoculated on to blood agar slopes. The supernatant fluid of the original brain broth culture after twenty-four or forty-eight hours' incubation had been injected into the ear vein of rabbits. The animals had been killed on the fifth day and cultures in brain broth had been taken from any obvious lesions and from the heart blood into hormone broth. The organisms grown had all been in pure culture. The streptococci isolated had been subcultured every month on to blood agar slopes which were kept in the dark at 3° C. after incubation for twenty-four hours at 37° C. It was found that streptococci which when first isolated tended to localize specifically in rabbits, might lose their pathogenicity under conditions of culture. It was thought that this change was probably correlated with variation from smooth to rough forms and was not appreciably affected by passage. "Specific" localization of pathogenic organisms appeared to depend to some extent on the size of the dose injected.

DR. K. R. STEENSON (Dunedin) said that he had carried out research work on rheumatoid arthritis for eighteen months. Complement fixation to streptococci had been done to determine if the serum of patients suffering from rheumatoid arthritis gave a stronger fixation than normal serum. The work had been carried on the lines described by Burnbank and Hadjapoulos. He had used the same methods, but had failed to make his results coincide with theirs. Complement fixation tests had been carried out with single strains of streptococci in an attempt to localize the source of infection. Whenever complement was fixed by one strain, he found that it was fixed by other strains owing to cross fixation.

PROFESSOR H. P. PICKERILL (Dunedin) said he was interested in Rosenow's work. Dr. Kellaway gave the time between injection and killing of the animal as five days. He thought that Rosenow waited several weeks. It also seemed to him that rather large doses were given in comparison with the size of the animal. One to five cubic centimetres per kilogram body weight for a rabbit seemed to him too large a dose. He wondered whether it would be possible to give repeated small doses. He wished to know if Dr. Kellaway's work would be of any value in diagnosis. He thought the relationship between septic teeth and tonsils and rheumatoid arthritis was important.

He asked Dr. Kellaway if he would describe the method of collecting organisms from teeth and tonsils. He asked if Dr. Kellaway had proved that the teeth were obviously infected and what the type of lesion was. He thought that skiagrams of the infected teeth should be taken.

DR. A. H. TEBBUTT (Sydney) said that it was unfortunate that Dr. Kellaway's results did not point to bacterial evidence of focal infection. When asked to examine a septic focus and find the particular organism, the bacteriologists were unable to do so. Vaccines were prepared from all the organisms found. There seemed to be no way of isolating a definite strain.

DR. KELLAWAY replied that Professor Pickerill's remarks were extremely interesting. With regard to the size of the dose he agreed with him that the doses given were too large, but the doses employed by him were those used by Rosenow. Rabbits could stand a large dose without any immediate effect and he thought that it was much better to give a large dose containing a small number of organisms than a small dose with a large number of organisms. He had attempted to carry out Professor Pickerill's suggestion by giving repeated small doses. The animals had become sensitive either to some protein or to the organisms and also susceptible to their effects. All he had succeeded in doing was to kill the animals. Faver showed that streptococci by themselves would not produce a joint lesion, but if the animal were first sensitized with a small dose and then a larger dose was given, joint lesions would be produced. He claimed that the changes in the tissues were of greater significance than the finding of the organisms. He had injected dead cultures into the knee joints of animals and had then given small doses intravenously and in all cases he had killed the animal.

With regard to the technique the organisms were usually collected from tonsils. There was no doubt concerning the association of acute tonsillitis with acute nephritis. On the other hand he was not prepared to say that the Rosenow type was an absolute criterion for diagnosis. Cultures were obtained from deep down in the tonsillar crypts. A good exposure was obtained with a tongue depressor; a blunt-ended silver probe was inserted straight into the crypts. It was essential to pass the probe into the crypts to obtain pathogenic organisms. Two or three cultures were always taken. The same thing applied to teeth. If the teeth were extracted, it was difficult to avoid secondary infection. The method he used was to clean the outside of the teeth carefully and then to attempt to obtain a culture from the point of the apex. He did not actually obtain cultures from the root canal. He usually found that teeth with obvious chronic infection at the root gave cultures which contained only one or at the most two organisms.

Finally with regard to the diagnostic value he was very sceptical. He had endeavoured to carry out investigations in the same way as Rosenow had done in his experiments. Strains of streptococci were plated and tested against patients' freshly drawn blood. This was done in a number of cases, but no light had been thrown on the pathogenicity of the organisms isolated. He agreed that complement fixation was very difficult.

SECTION VII.—OTOLOGY, RHINOLOGY AND LARYNGOLOGY.

Chronic Spheno-Ethmoiditis.

DR. T. A. MACGIBBON (Christchurch) in the course of a paper on chronic spheno-ethmoiditis pointed out that the importance of the condition lay in the fact that many unexplained diseases had their origin in hidden septic foci, without the eradication of which it was impossible to

cure the sufferers. Dental and pharyngeal sources had had their day and still held the field, but in paranasal disease they had a greater cause of many systematic and local troubles. He classified the condition in a catarrhal or non-suppurative type which Sluder called hyperplastic spheno-ethmoiditis, a suppurative spheno-ethmoiditis, with or without complications. The latter could be latent, without visible signs, manifest, with visible signs or closed. The headache of sphenoiditis was usually occipital, but was at times vertical. As the ethmoid was also involved, pain deep in the eye and behind the region of the lachrymal tone occurred. When the sphenoid involvement was extensive and the optic nerve appeared to be surrounded by the sphenoidal cavity, there was probably asthenopia and some interference with the colour fields. If the third and fourth nerves were involved, weakness in the corresponding eye muscles and pain after reading would be noted. It was sufficient to remove obstructions such as a deviated septum or a portion of the middle turbinal bone. A long course of "Argyrol" was useful. Diet, fresh air, abstinence from smoking and plenty of exercise helped to cure. Dust and tobacco smoke were harmful. When polypi were associated with this type, the only rational method of treatment was a complete exenteration of the ethmoid labyrinth and as the sphenoid was almost certainly affected, it should be fully opened up.

The treatment of spheno-ethmoidal suppuration without polypi depended on the type form of latent suppuration. In the mild type with little toxic absorption, climatic and local treatment should be tried before operation. "Argyrol" drops should be instilled at bedtime. In the severe type with toxæmia, aeration and efficient drainage should be aimed at. Obstruction must be removed and cells from which pus was issuing, should be opened.

For manifest empyema the treatment was the same as for severe type of the latent form. The treatment of closed empyema consisted in the application of cocaine and adrenalin or antipyrine to cause shrinking of the mucous membrane. Flushing with warm Dobell's lotion often produced temporary benefit. If the pain returned, the affected cells should be opened. If it did not return, it was better to wait till the acute stage passed off.

For speno-ethmoiditis in children the remains of tonsils and adenoids should be removed by the radical method and the patients left to recover by medical and climatic treatment. Mountain life in the open air was very useful. Small doses of thyreoid extract and Lugol's solution were prescribed and orange juice, vegetables and meat were ordered.

Various operations were described in detail, Ballenger's, Mosher's frontal-ethmoidal, Moure's external ethmoidal, Sluder's and Skillern's and the author's own operation.

DR. G. PINESS (Los Angeles) thought that many of these cases of spheno-ethmoiditis in children were due to allergy. He considered that the water-logged lymphoid tissue of the mucous membrane was not infected tissue, because there was no small round-celled infiltration, but mononuclear cells were found in preponderance. It was due to lymph œdema and these children were potential asthmatics. He advised against hæmostatic agents before bleeding occurred, but thought it helpful to test the coagulation time so as to be prepared for hæmorrhage.

DR. W. J. MACDONALD (Wellington) considered that the preliminary use of "Hemoplastin" was unsatisfactory and cited two cases in which "Hemoplastin" had been given to patients who bled six hours after operation.

DR. J. HARDIE NEIL (Auckland) said that sometimes very dense ethmoids were encountered. Vacuum headache in frontal sinusitis was a symptom; pressure was a myth and one got negative results if only the obstruction were removed. He did not find skiagrams of much help. Some cases were postantral after coryza. Spheno-ethmoiditis in children was a bone of contention between pædiatrists and oto-rhinologists. Mass operations were rightly condemned because of hæmorrhage; there was a fairly heavy mortality. He referred to points of technique in packing and said that removal of the inferior turbinal bones showed lack of surgical experience.

DR. R. PULLEINE (Adelaide) said that inflammation of the posterior ethmoidal cell in the middle turbinal bones caused a latent sinusitis which was sometimes very puzzling. There was not much secretion and yet the condition caused violent headache. In treating it he split the turbinal bone and squeezed out the secretion. He considered that vacuum headache due to obstruction of the fronto-nasal duct was common. It was most important that all mental patients should be examined for sinus disease. In his opinion the hyperplastic form of spheno-ethmoiditis was rare. He thought that sinusitis must be common amongst Maori children, for he had seen in the North Island several children from whose noses pus streamed. He agreed that deformities in the septum or in a sinus might cause an acute sinusitis to become chronic. He emphasized the intimate and varied relations of the optic nerve to the sphenoid cavity so well shown by Onodi. He had seen several cases of retrobulbar optic neuritis due to sphenoid trouble and the causation of these cases was often missed by ophthalmologists. In regard to the tendency of the sphenoidal cavity to contract, he found that by breaking down the wall between the posterior ethmoidal cell and the sphenoid there was less difficulty in keeping it open.

DR. H. J. GRAY (Perth) used cocaine paste for anæsthesia in preference to packing and thus obviated sweating and collapse. He used dental broaches for carrying the cotton wool. He found X rays helpful at times, particularly to show pansinusitis or to isolate a maxillary sinusitis. He considered that bronchiectatic symptoms were due to the whole of the respiratory tract being affected in the same way. The closing of the opening made into the sphenoid was a great bugbear; if the opening were too low, it was more liable to close. He thought that if he could clear out the mucosa, he would get better results.

DR. A. J. HALL (Dunedin) asked whether optic neuritis and atrophy were often produced by toxic causes.

DR. W. J. DENEHY (Melbourne) preferred cocaine and adrenalin paste to packing. Large quantities of solution were necessary in antral lavage. He preferred local anæsthesia, but in some operations he used preliminary packing with cocaine and adrenalin and then intratracheal general anæsthesia.

DR. T. A. MACGIBBON in reply said that 50% of children in Christchurch were sufferers from spheno-ethmoiditis and if all these were potential asthmatics, there would be a tremendous number shortly. He considered that X ray work was a matter of personality, but often very helpful if good plates could be obtained. He thought a common fault in bronchiectasis was paranasal disease and considered that vacuum headache was due to sinusitis. The block operation for ethmoiditis was a dangerous one. Pansinusitis in Maori children was probably due to syphilis. He believed in removing the middle turbinal bone for disease of the posterior ethmoidal cells contained in it.

SECTION VIII.—NEUROLOGY AND PSYCHIATRY.

The Education and After Care of Mental Defectives.

DR. OLIVER LATHAM (Sydney) after prefacing his remarks with some of his early personal experiences, outlined some of the work done in New South Wales, mentioning the State Children's Relief Department, the State School Medical Service, with special schools and Montessori classes and the new industrial school for mental defectives at Macquarie Fields. He then referred to the results obtained in the United States in treating mental defectives. The "visitor, a social service agent" had been developed in a great degree with happy results. A profitable line of advance would be to inquire into the percentage of mental defectives discovered at school age who would of their own family effort make good in the community, and who would make good if taken from families too stupid to direct their offspring or if of the vagrant and criminal class. Dr. Latham then gave in some detail a programme for the treatment of mental defectives and also for their after care, emphasizing the importance of the visits and advice of the social service worker. He concluded by dealing with the value and great need of psychiatric clinics established in connexion with and as a part of general hospitals.

Social Aspects of Mental Disorder.

DR. S. A. MOORE (Dunedin) referred to the report of the committee in New Zealand on the question of mental defectives which had found that the radical remedy for mental deficiency was segregation and sterilization and recommended the appointment of a eugenic board. Environmental conditions—physical, mental, emotional, moral—exerted a profound influence and the mental hygiene movement would have to take into account all of these factors. The educational training of mental defectives was greatly handicapped by the lack of teachers with the necessary psychiatric knowledge. It should be made possible for doctors and teachers to qualify with some first hand knowledge of the problems provided by mental defectives. Lectures in men's and women's clubs should be given, so that the public could be made aware of the facts that the problem child could be treated. The sympathy and active cooperation of the whole community were needed.

University Teaching of Psychiatry.

DR. C. A. HOGG (Sydney) read a paper on the university teaching of psychiatry. He emphasized the importance of a thorough training in psychiatry in the study of the infant, child and adolescent. He also discussed the present disadvantages to the community arising from the absence of sufficient systematic training in psychiatry. If the general practitioner were trained in psychiatry, including psychology and neurology, he would be of service in supplementing knowledge in regard to the earlier stages of mental disorder. He held that any intelligent approach to the understanding of abnormalities of the mind should be preceded by a study of normal psychology combined with a laboratory training. A student's course in psychiatry should therefore include lectures on psychology and a laboratory course of mental tests and practical work. During the second and third year in the physiology course lectures having special reference to the needs of psychiatry might be incorporated with the systematic lectures on the physiology of the nervous system. After the anatomy and the pathology of the nervous system had been studied, the student should be ready for systematic lectures in psychiatry and these should be followed by lectures on medical jurisprudence. The clinical teaching of the student should include demonstrations on patients with early and incipient insanity, clinical teaching in connexion with more advanced mental disease and demonstrations on neurological conditions. Laboratory facilities should be available not only for the study of pathological conditions, but also for experimental psychology. It was also important that the student should become acquainted with the use of the ophthalmoscope and should have a knowledge of the examination of the ear and of the hearing and equilibrium tests. In conclusion Dr. Hogg outlined a somewhat similar course of post-graduate training.

DR. D. W. CARMALT JONES (Dunedin) as a teacher of systematic and clinical medicine to medical students declared himself frankly hostile to any attempts to introduce the systematic teaching of psychiatry to unqualified students. Every clinical teacher knew that the average student only slowly became able to recognize symptoms and to correlate them with physical signs. Dr. Carmalt Jones therefore held that the psychological aspect of disease could be profitably studied only after a thorough grounding in uncomplicated organic disease and that it was premature and destructive of sound professional training to introduce students to psychological study before they were well grounded in organic disease. In his opinion the probable value of the scheme submitted for teaching psychology was very small because the curriculum was overburdened and the time available for this most difficult study would be quite inadequate. The student would get only a smattering of the subject and this was where the danger lay, for psychiatry was a dangerous thing to play with and inexpert psychiatry had perhaps as great potentiality for evil as inexpert surgery. Psychology should be a post-graduate study. What the undergraduate required was some practical acquaintance with the subject obtained from teaching in psychiatric wards and out-patient departments of the general hospitals.

DR. ST. L. H. GRIBBEN (Seacliff) agreed with Dr. Carmalt Jones that the teaching of psychology should be a post-graduate study. They should walk before they attempted to run. These things were being rather forced upon the profession. As a teacher of mental diseases to medical students he realized that the curriculum was crowded and that the lectures on mental disease should not be thrust too much into the foreground. A specialist should first of all have been a general practitioner.

DR. J. MACPHERSON (Auckland) agreed with Dr. Carmalt Jones in the matter of learning psychology. He would say that three years was a reasonable period to devote to this study. He had not much faith in psycho-analysis, though he practised it himself to a limited extent and had had some successes. A smattering of psychology was worse than useless.

DR. H. F. MAUDSLEY (Melbourne) referred to differences between the lay psychologists. The lay psychologist should be forced to call in medical opinion in his work. He agreed with Dr. Carmalt Jones that the present course should not be curtailed. But the idea was not to train psycho-analysts, but to teach the medical student to recognize the early stages of mental disease. The student should be taught how to approach patients and he should also be taught that psycho-analysis was very dangerous in unskilled hands.

DR. A. R. FALCONER (Dunedin) thought that more training was necessary in psychology and mental hygiene. There had been confusion of thought in that psychology was not psycho-analysis. The lay psychologist had to a certain extent displaced the medical psychologist and that was exactly what should not be allowed. The layman should be the servant of the medical man.

DR. S. J. MINOGUE (Callan Park) said that general practitioners had a profound ignorance of things psychiatric. Especially in women mental symptoms were frequently referred to their sexual organs and 50% to 60% of those admitted to mental hospitals had had abdominal section. General practitioners could not recognize early mental states. Therefore to do justice to the public the student should learn more mental hygiene, so that he could recognize the early signs of mental disease.

DR. H. M. NORTH (Gladesville) thought that Dr. Hogg's paper introduced too sweeping reforms. A course of fifty to sixty lectures was important in the training of a student and this should include some descriptive psychology. It should be placed at the end of the medical course. Regarding the care of mental defectives he thought that Dr. Moore was too sanguine about what could be done by environment.

DR. R. H. BAXTER (Christchurch) frequently encountered mental symptoms in his neurological patients. He was often asked to give a prognosis. He had been taught very little psychiatry in his course, but it had proved very useful. The main problem for the general practitioner was to determine when the mental condition was bad enough to warrant him in sending the patient to a mental hospital. He felt it was necessary that some tuition in psychiatry should be included in the curriculum. No matter how much psychiatry was taught, he hoped that very little importance would be attached to psycho-analysis.

DR. E. A. BUCKLEY-TURKINGTON (Auckland) thought that in the teaching and training of mental defectives the medical psychiatrist not the layman should be the final court of appeal. There was a danger of the layman displacing the medical man.

DR. LATHAM, DR. MOORE, AND DR. CARMALT JONES briefly replied.

SECTION XI.—ORTHOPÆDICS.

Epiphysitis.

DR. A. OWEN-JOHNSTON (Invercargill) read a paper on chronic epiphysitis and metaphysitis. He said that the only description of epiphysitis given in textbooks was that of the acute suppurative type. He had recently had experience of a number of acute and chronic inflammatory bone and joint conditions. Included among these were

a number of cases in which the pathological condition was a chronic inflammation localized to the metaphysis or juxtaepiphyseal site. He had concluded that chronic epiphysitis was a definite and common clinical entity and that it was not always tuberculous. The infecting organism in his series had been exclusively *Staphylococcus pyogenes aureus*. Injury probably played only a small part, but undoubtedly the actual cause was the deposition of germs by the blood stream in the neighbourhood of the epiphysis. When the germs were deposited they might be so attenuated that they were immediately cut off by a very slight inflammatory reaction. These germs might be activated at a future date. If they were of a slightly more active strain they caused a greater reaction which ended in the death of a small portion of the upper end of the diaphysis. A small abscess cavity would form in the upper end of the diaphysis and find its way to the surface.

Dr. Owen-Johnston discussed the symptoms and diagnosis of the condition and said that difficulty would sometimes be experienced in distinguishing it from tuberculous disease. X ray examination would reveal whether the disease was in the metaphysis or in the epiphysis. If the former was affected the differential diagnosis was unimportant, for early operation was indicated even in tuberculosis. When the epiphysis was affected, the condition should be treated as tuberculous, if any doubt existed. The type of treatment depended on whether the disease was localized to the metaphysis or whether the epiphysis was involved. In the former case early operation was indicated and in the latter the joint ultimately had to be opened and ankylosis resulted. In conclusion Dr. Owen-Johnston gave a summary of the histories of several patients.

DR. J. RENFREW WHITE (Dunedin) said that instead of disability due to ankylosis of the neighbouring joint, his experience had taught him that the patients were suffering from a disability due to unequal growth of the epiphyses. He referred to the condition of patients who had had as much as forty-three millimetres (an inch and a half) lengthening of one leg and of several patients with shortening. He also spoke of deformity due to destruction or partial destruction of one of the bones of the leg or forearm. He asked for any suggestions for treatment of these conditions and pointed out the difficulties in the way of operative correction.

DR. LESLIE WILL (Christchurch) said that he had seen only three patients with conditions of the kind described. Instead of ankylosis of the joints the end result had been deformity due to unequal growth at the epiphysis.

DR. N. D. ROYLE (Sydney) stated that he had not seen this condition as frequently as Dr. Owen-Johnston had. He had, however, studied one patient with the aid of skiagrams taken at frequent intervals and had noted the changes similar to those which Dr. Owen-Johnston described.

DR. OWEN-JOHNSTON replied by saying that he thought from the extraordinary cases which had occurred in his practice in so short a time, he had struck a patch of these cases. He further showed skiagrams of the condition.

Abnormality of the Fifth Lumbar Transverse Process.

DR. A. S. MACKY (Auckland) read a paper on the sacralization of the fifth lumbar process and its relation to low back pain. He said that in the complete form of this condition the transverse process assumed the characters of a sacred buttress. There were various types of completeness of the deformity. The abnormality might be unilateral or bilateral, complete or incomplete on both sides or complete on one and incomplete on the other. There was generally a long period of disability and the pathological process might produce the syndrome of arthritis, compression of the fifth lumbar root or a combination of these. The complete type usually gave rise to an arthritic syndrome and in the incomplete type neuritic symptoms predominated. Dr. Macky described the anatomical arrangement of the parts and its bearing on the various syndromes. He laid stress on the fact that backache was only a symptom and that the cause of the pain had to be found. He enumerated the condition which had to be considered in making a diagnosis. The treatment was essentially operative and consisted in removal of the transverse process. This might be done in two ways. The process might be exposed by splitting the fibres of the *erector spinæ* muscle or exposure might be obtained by stripping the lumbar and gluteal muscles subperiosteally and removing a small segment of the ilium. Dr. Macky described five cases of this condition.

DR. C. NIGEL SMITH (Sydney) said that he had read the literature dealing with this subject and was not convinced of the necessity for operative interference. From 15% to 20% of normal people had the condition, but it caused no trouble.

DR. F. F. ULRICH (Timaru) said that he thought the idea of operative interference had been introduced into England by American surgeons during the war. It would be wise to have statistics showing how often the condition occurred without giving rise to symptoms.

DR. RENFREW WHITE (Dunedin) said that Goldsweight of Boston, considered that this was a common congenital abnormality. In his experience symptoms did not usually occur until middle life. He was inclined to the belief that the condition was postural, as it usually occurred in people of the short, thick-set type who had lumbar vertebræ of a uniform kind and in whom, therefore, the condition would be more likely to give rise to symptoms. Imperfect posture was a secondary factor and produced the symptoms.

DR. D. F. MYERS (Wellington) agreed that the condition occurred in approximately 20% of people without giving rise to symptoms.

DR. N. D. ROYLE (Sydney) said that he did not think the pain described was always attributable to this condition. There was a tendency to disregard sciatica as a separate entity, though in his opinion this condition did occur. The best approach to the transverse process, if operation were resorted to, was at the lateral edge of the *sacro-spinalis* muscle. Subluxion of the sacro-iliac joint was not uncommon; it gave rise to very similar symptoms. He had found the best treatment was to make a belt out of old motor car tubes.

Osteo-Arthritis.

DR. MARION A. RADCLIFFE-TAYLOR (Dunedin) read a paper on the pathology of osteo-arthritis of the hip joint as seen at operation. She said that she intended her remarks to apply only to hip trouble occurring in adults, but characterized by a typical deformity of the head of the femur associated with an equally typical set of clinical manifestations when one joint only was affected. She pointed out that two types of X ray picture were produced. In one the general globular shape of the head and the cup shape of the acetabulum remained, but there was a collar of new bone at the margin of the articular surface of the femur and to a lesser degree at the margin of the acetabulum. In the other type the head of the femur had lost its globular shape and had become flattened out in an umbrella-like manner so that the collar of osteophytes encroached on the neck of the femur. During the last two years Dr. Radcliffe-Taylor had studied thirty cases of this condition and sixteen of the patients had been submitted to operation. She drew attention to the importance of studying the pathological changes as seen in the living tissues at the time of operation. The most constant striking feature was the appearance of the synovial membrane. Over the anterior aspect of the neck of the femur it had a dusky red colour with a coarse villous appearance. The synovial membrane was greatly proliferated and a great deal of it was tucked away under the overhanging osteophytes. Similar proliferation of the synovial membrane was found covering the lower portion of the acetabulum, but none was present behind the femur. Dr. Radcliffe-Taylor thought that a great deal of the pain caused by forcible internal rotation of the joint was due to the pinching or compression of inflamed synovial membrane. The cartilage over the postero-superior weight-bearing surface of the head was usually worn away, leaving a smooth surface of eburnated bone. The cartilage over the rest of the head was far from normal. The osteophytes consisted of cancellous bone with a compact surface covered with cartilage of normal appearance. The

changes in the acetabulum were similar, but less pronounced. Dr. Radcliffe-Taylor discussed the essential cause of the condition. She pointed out that the joint in osteo-arthritis was entirely different from that of rheumatoid arthritis. All her patients had been farmers and accustomed to riding a lot. She thought it not impossible that osteo-arthritis was due to long continued mechanical misuse of a joint.

DR. D. F. MYERS (Wellington) pointed out that the X ray pictures of some of the patients very closely resembled the end results of a healed Perthes's disease.

DR. LESLIE WILL (Christchurch) said that he thought some of these cases were the sequel to pseudocoxalgia. He agreed that the synovial membrane was the seat of the pain. Incorrect weight bearing was also a factor. He pointed out that in traumatic arthritis of the knee joint the synovial membrane grew inwards over the cartilage. He asked the speaker whether she considered that pain or stiffness was the principle indication for operation.

DR. N. D. ROYLE (Sydney) said that he did not consider that the pain was entirely due to the inflammation of the synovial membrane. The limitation of movement and the pain were caused by changes in the capsule. He agreed that the muscular spasm caused the wasting. He had noted that the occupation of the patients was farming and suggested that farmers as a rule neglected their teeth. He suggested that there might be some infective element in the arthritis.

DR. J. RENFREW WHITE (Dunedin) said that he had seen the patients with the speaker and he too was inclined to think that the condition was not infective. It was monarticular in all and he wondered if it were due to the wearing out of the hip joint over a long period during which it was subject to slight traumatism, perhaps the result of faulty posture or early disease, such as Perthes's disease.

Dr. Marion A. Radcliffe-Taylor in replying said that in the younger patients she had regarded the condition frequently as a sequel to Perthes's disease in childhood; the symptoms had appeared in early adult life. The condition was monarticular in every patient save one in whom both hips were affected. There was no other sign of arthritis or rheumatic trouble in any other joint. Pain had been the chief indication for operation. She considered that the patient who had a pain in the hip with partial limitation of movement was in a better position for carrying on his occupation than one who had a moderate range of movement which constantly gave rise to pain. She showed skiagrams of patients who had been operated on. All the patients were free from pain and with the exception of those still under treatment they had been able to return to their usual occupations.

TUESDAY MORNING, FEBRUARY 8, 1927.

COMBINED MEETING.—SECTIONS III, V AND IX.

The Prevention of Diseases in Infancy and Childhood.

DR. A. M. WILSON (Melbourne) read a paper on the prevention of disease in infancy and childhood. He said that he would approach and treat the subject from the point of view of the obstetrician. He said that fœtal death might occur during any stage of the fœtal existence. Thus there were antenatal death, intranatal death and postnatal death. The causes of antenatal death were maternal, placental and fœtal and they could best be prevented by antenatal care. The value of antenatal care was exemplified by the results obtained at the Women's Hospital in 1926. Two maternal deaths had occurred among 1,281 mothers who had received antenatal care, and twenty-six deaths had occurred among 1,399 mothers admitted in emergency. Intranatal death was nearly always due to asphyxia or birth injury and Dr. Wilson pointed out that watchful expectancy and masterly inactivity on the part of the obstetrician would bring most labours to a successful termination. Postnatal fœtal death was due either to occlusion of the respiratory tract by mucus sucked in by premature attempts at respiration or by paralysis of the respiratory centre either by asphyxia, birth injuries or drugs given late in labour. There was some divergence of opinion as to what constituted the neonatal period. He thought it was convenient to regard this period as extending over the first four weeks, as undoubtedly the commonest causes of death during this time were obstetrical rather than nutritional. The causes of neonatal death were: (i.) under-development of the vital centres owing to prematurity, especially if associated with malnutrition of the infant, (ii.) malnutrition and debility of the infant owing to constitutional disorders, (iii.) birth injuries, especially cerebral hæmorrhage. In discussing postnatal care Dr. Wilson deprecated the tendency amongst some obstetricians to regard their work as finished as soon as the child was born. The importance of breast feeding could not be overestimated and he was opposed to the indiscriminate use of castor oil, brandy and artificial foods during the first week of the infant's life. Dr. Wilson also emphasized the necessity for greater care in the treatment of premature infants and he referred to the treatment of cerebral hæmorrhage by lumbar puncture and of *morbus hæmorrhagica neonatorum* by the injection of whole blood from the mother.

DR. HARVEY SUTTON (Sydney) read a paper on the prevention of the infectious diseases of school life. He said that the medical examination and supervision of children during school life afforded an opportunity for studying the life history of the human being during about one-third of the growth period of existence. The infectious diseases commonly found in school life fell naturally into three groups, diseases of the preschool period, diseases of the school ages and diseases of adolescents and young adults. The second to the fifth years of life were the focusing point of attack for most of the common infectious diseases of childhood. Thus the preschool figures supplied the keynote for future control. Failure in the past was due to the fact that concentration had been on the school child and little had been done for the younger children. This was also the reason why closure of schools had universally proved a failure. Infection undoubtedly could occur at school, but it could be controlled by such measures as the abolition of the common mug, by introducing open air classes where possible and by making the school an observation centre. Dr. Sutton then considered the various infectious diseases in turn and indicated measures which might be adopted in regard to each. Great opportunities awaited the modern general practitioner in the home control of diphtheria. Practitioners still existed who retained prehistoric ideas about insanitary conditions as the cause of diphtheria. For control it was necessary to await the demise of such individuals. The majority of practitioners treated the patient adequately, but only a few exploited the various available avenues of prevention of spread of infection. When the practitioner considered these matters his direct responsibility, then and then only would control become effective. Dr. Sutton also referred to the seriousness of the massive dose of tuberculosis under family conditions. Immunization by Calmette's method, separation from tuberculous parents, farm colonies and subsidization of the father with "open" tuberculosis of the chronic type were measures to be considered. Malnutrition was merely a name to the general practitioner for a condition of no importance. Dr. Sutton showed what steps might be taken to overcome this defect. He advocated inoculation of children in unsewered districts against enteric fever and emphasized the necessity for watching for the termination of infectivity in this disease.

DR. A. JEFFERIS TURNER (Brisbane) said that the prevention of disease depended on research and the practical application of the results of research. Turning to the question of the mortality during the first week of life Dr. Turner said that a fairly constant percentage of infants died early or survived as bodily or mental defectives. Antenatal supervision and treatment should prevent a great deal of this infant wreckage. Syphilis was the most important cause of death. Routine Wassermann tests of mother's blood during pregnancy should be carried out. A great deal of the work in the clinics in Queensland

consisted in an attempt to rectify the most elementary mistakes that had been made in starting the feeding of infants. Breast feeding was the most important preventive of infant mortality during the first year. When the mother left the lying-in hospital she should be directed to attend the nearest infants' clinic once a week to have the baby weighed. If this were done the wastage of infant health and life would be largely reduced. By medical inspection of school children and the provision of necessary treatment the State could do much. Clinics for children under school age formed another step. The primary object of these clinics was the prevention of disease. The methods employed were educative. For their success three conditions should be observed. The nurses should be thoroughly trained. They should have adequate medical supervision and assistance and they should cooperate with the medical profession. There should be a medical director of the whole service and medical lecturers at the training school. There should also be a local medical practitioner attached to each clinic. His duties should be confined to one afternoon a week. In regard to the mortality during the second year of life the preventive measures depended mainly on those aiming at the combating of infections such as diphtheria, scarlet fever, measles, whooping cough and tuberculosis, bronchitis and pneumonia. Many defects at this stage were due to removable causes, such as adenoids.

PROFESSOR J. C. WINDEYER (Sydney) called attention to the importance of mothercraft teaching and the training of the obstetric nurse. The period of training of the obstetric nurse should be extended. One year was too short.

DR. H. COOPER PATTIN (Norwich) found satisfaction in the fact that in New Zealand where the British race was comparatively unmixed, the standards of development of children were high.

DR. CONSTANCE ELLIS (Melbourne) called attention to the value of early treatment of gonorrhœa, in order to prevent subsequent sterility. In this way the Fallopian tubes could be saved from infection.

DR. ADA PATTERSON (Wellington) disagreed with Dr. Harvey Sutton in regard to the value of swabbing of throats in diphtheria. She urged the employment of prophylactic treatment as practised in New Zealand.

DR. G. BRUTON SWEET (Auckland) spoke of the futility of closing schools in times of epidemics. He urged the establishment of open air schools. This was a preventive measure against the common cold.

DR. C. H. GORDON (Riverton) asked for information concerning sex education in schools. He pointed out the difficulties surrounding this subject. It was a matter for earnest consideration.

DR. H. L. STOKES (Melbourne) spoke of the care of ill-nourished children at Toronto.

Dr. A. M. Wilson, Dr. Harvey Sutton and Dr. Ada Patterson replied briefly.

COMBINED MEETING.—SECTIONS I. AND XII.

Medical Aspects of Hydatid Disease.

DR. R. R. STAWELL (Melbourne) read a paper on the medical aspects of hydatid disease. The subject resolved itself into the recognition of the disease in the human host and the prevention of its occurrence there. There were five or six links in the chain of evidence indicating the presence of hydatid disease. These were: (i.) The toxic symptoms, (ii.) the physical signs, including the result of X ray examination, (iii.) the special complement fixation test, (iv.) the Casoni reaction as lately interpreted by the Melbourne workers, (v.) the occasional eosinophilia, (vi.) the occasional presence of hooklets and of actual cysts in sputum and excreta. The so-called toxic symptoms should be recognized as manifestations of anaphylaxis, an abnormal degree of sensitiveness to irregularly recurring absorption of varying amounts of hydatid poison. Among the toxic symptoms the most commonly recognized were those that affected the skin, such as urticaria, erythema and pruritus. These were often misinterpreted when they occurred in association with anaphylactic gastro-intestinal symptoms. Anaphylactic response might manifest itself by abnormalities of the respiratory system. Dr. Stawell gave a brief description of the physical signs of hydatid disease of the liver and of the lungs and concluded by reference to the preventive aspect. He said that hydatid disease commonly started during childhood and that children were infected directly from dogs. Dogs were infected by eating raw offal from infected sheep. The only plan of ultimate prevention was to prohibit the feeding of dogs with hydatid-infected raw material.

DR. H. R. DEW (Melbourne) submitted a paper on hydatid anaphylaxia. The many peculiar toxic manifestations following puncture or rupture of hydatid cysts had only of recent years been recognized as anaphylactic in nature. A patient harbouring a hydatid cyst absorbed varying amounts of specific hydatid antigen. As a result specific sensitization of the cells of the host took place and if at a later period even small quantities of hydatid fluid were absorbed into the circulation, anaphylactic symptoms occurred. The degree of sensitization varied greatly, but it was present in 90% of persons with uncomplicated cysts who yielded a reaction to the Casoni test.

Gross leakage in an uncomplicated cyst did not occur. Leakage might occur, however, as a result of trauma or surgical interference and the symptoms produced might be mild or severe. Recovery was the general rule, but each successive attack became worse. The symptoms were variable; they were cutaneous, gastro-intestinal, respiratory, cardio-vascular or nervous.

The gravest cases occurred when there was intravascular rupture and rapid absorption in highly sensitized subjects. Symptoms occurred in a minute or two with often a fatal termination within twelve hours. This type of case was rare.

In typical severe cases the onset was also rapid. Remissions might occur for some days. In both these types urticaria was by no means constant, so that it should not be taken as an obligatory criterion of hydatid anaphylaxis.

The benign cases formed the largest group. They were due to the absorption of fluid in patients not highly sensitized. Commonest manifestations were cutaneous. Symptoms did not appear for thirty-six to forty-eight hours after rupture. Anæsthesia abolished the anaphylactic state and grave symptoms rarely occurred. After the anæsthesia had worn off, however, symptoms were sometimes observed. After operation and recovery the patient frequently remained sensitive for a long period. The postoperative cases revealed that resensitization tended to occur after rupture and that apparently anaphylactic symptoms could be repeated almost indefinitely.

He concluded that exploratory puncture of even a simple cyst was dangerous. The degree of sensitization of patients with hydatid disease varied greatly. Operation under local anæsthesia was not without risk. General anæsthesia greatly reduced anaphylactic sensitiveness. The reaction to the Casoni test formed a useful preoperative guide.

DR. R. NEIL GUTHRIE (Christchurch), in the course of a paper on the medical aspects of hydatid disease, emphasized the necessity for a combination of all their resources in diagnosing hydatid disease and the mutual assistance between those who were concerned in conducting the examinations. In bone the diagnosis by X ray was difficult. He demonstrated a series of lantern slides pointing out cases in which he had made a faulty diagnosis. In the chest the appearances often resembled a small hydrothorax or pleural hyperplasia; skiagrams should be taken with the Potter-Bucky diaphragm in the dorsal or ventral position and in the left lateral position with exposures similar to those used in renal diagnosis. Uncomplicated cysts might be totally masked by the heart or only the lateral margin of the shadow might be visible in the neighbourhood of the costo-phrenic angle. He issued a warning with regard to the grave danger of needling for diagnostic purposes. An X ray examination should take precedence of this procedure as it was free from danger to the patient. The fluoroscope and the radiogram would

afford valuable information in cases of abdominal hydatids. The radiogram should be obtained in the lateral position with the film lying against affected side. He had not yet the opportunity of using pneumo-peritoneum in the diagnosis of abdominal hydatids. Radiological examination was of great value to the surgeon, particularly in intrathoracic cases in eliminating postoperative complications, such as incomplete drainage, hydro-pneumothorax, recession of the lung, lung abscess and hydrothorax. Lastly, follow-up examinations showed the progress of recovery and in conjunction with subjective and objective signs assisted in determining the degree of restoration to health.

DR. L. E. BARNETT (Dunedin) stated that hydatid disease was readily understood provided that one knew the life history of the *Tænia echinococcus* by reference to a diagram of the surrounding adventitia and the two membranes of a cyst (ectocyst and endocyst). He explained that if the cuticle or endocyst were intact, no absorption of hydatid fluid took place, but if owing to its friability it were ruptured, as it might easily be, even by a blow or by violent muscular exercise, some of the contents escaped and anaphylactic symptoms resulted. Often bile from unobliterated bile ducts entered and being mildly septic made suppuration possible.

DR. S. V. SEWELL (Melbourne) referred to the histories of two patients whose sputum had contained tubercle bacilli; in addition, there was a hydatid cyst which might easily have been overlooked. In one instance surgical treatment of the hydatid led to improvement of the tuberculosis. In the other an exploratory puncture revealed pleuritic fluid, but in addition ruptured a hydatid cyst, with nearly fatal results from severe anaphylaxis.

He further spoke of the condition of a patient in whom sudden pulmonary symptoms after appendicectomy caused pulmonary embolism to be suspected, but from erythematous patches and left-sided pneumothorax hydatid disease was diagnosed; death from anaphylaxis had narrowly been averted by adrenalin.

In another patient diarrhœa and vomiting had been accompanied by urticaria; hydatid cyst had been diagnosed and found in spite of the fact that there was no reaction to the Casoni test; the hydatid complement fixation was obtained.

DR. S. S. ARGYLE (Melbourne) stated that in his experience sarcoma might be mistaken for hydatid cyst on radioscopic evidence; pleurisy with effusion did not exclude the possibility of a hydatid cyst which might produce a shadow in the skiagram after the removal of the fluid.

DR. R. R. STAWELL (Melbourne) expressed his appreciation of Dr. Barnett's contribution and agreed that any mild, unrecognized traumatism could produce some liberation of hydatid fluid. All those things called toxic were of an anaphylactic nature. He referred to the so-called hydatid diathesis; the patient was not hypersensitive to and did not react to the hydatid fluid, but was gradually poisoned by it. He knew of two patients who had had multiple omental hydatids and had gone slowly down under this gradual poisoning.

He referred to the problem of surgical technique, the abuse of which meant the resowing of the disease.

In his opinion mild degrees of anaphylaxis should be searched for as a routine in children of all ages. In Australia in his experience hydatid disease was lessening.

He referred to the public health museum where the wrong methods of avoidance were being illustrated. The avoidance of drinking unboiled water and of keeping dogs about the house was propaganda of twenty years ago. The hydatid ova when excreted were heavier than water and sank into the mud. Moreover, the ova were very vulnerable to air and sunlight and their viability outside the host was very slight. Dogs should be prevented from eating raw liver and lights and offal of sheep. If these were boiled, the incidence of hydatids would be reduced to a minimum.

The Casoni test applied to school children would be a reasonable method of determining the incidence of the disease. He admitted that he knew of many instances in which the infection had not occurred in childhood, but was due to massive infections during adult life.

DR. R. N. GUTHRIE (Christchurch) suggested periodically breaking the cycle in dogs by administering anthelmintics every six months.

Dr. Stawell objected that the dogs would be readily reinfected.

DR. L. E. BARNETT (Dunedin) agreed that they should give up teaching that water was a frequent source of hydatid infection. Though he used to teach the vegetable and water theory of infection, he had already called the attention of the authorities to the fact that it had become out of date and that hydatid infection occurred from direct contact with dogs. It was one of the maladies of dirty hands. Many years ago hydatid disease was very prevalent in Iceland. Women had been more commonly affected than men. The explanation lay in the fact that hydatid ova were caught in the wool of sheep. It was the women who used to milk the sheep and therefore got hydatid ova on their hands. When they gave up the milking of sheep, this disproportion disappeared.

Artificial Pneumothorax.

DR. J. F. MACKEDDIE (Melbourne) read a paper on artificial pneumothorax. England had been slow to adopt the practice of artificial pneumothorax and the same might be said of Australia. There were several reasons for this. In the first place the early leaders of the movement had been divided as to the class of case most suitable for it. Thus Rivière was still very conservative and Morriston Davies hailed every early unilateral tuberculous infection as the ideal one for artificial pneumothorax. Again it was not easy to decide to what extent the good side might be involved and yet respond to the collapse of the bad lung. There had been some diversity of opinion about the best way of entering the pleural cavity. Disaster might occur to the expert and the nature of "pleural shock" was unknown. The last reason was that artificial pneumothorax was the beginning of a series of refills and demanded perseverance on the part of both doctor and patient as well as the frequent use of X rays. Dr. Mackeddie described the apparatus in detail and said that in the preparation of the patient it was most important to gain his confidence. In describing the operation he said that the site of election for the insertion of the needle was the fourth or fifth intercostal space in the mid-axillary line. In regard to quantity Dr. Mackeddie pointed out that Dr. Burrell was usually content with two hundred and fifty cubic centimetres and with a conversion of an initial pressure of —12 and —4 to —8 and —2. Dr. Mackeddie then described certain difficulties that might be encountered and said that once collapse was established, refills were given at intervals of three weeks. He concluded by short reference to "Lipiodol" in the diagnosis of lung conditions.

DR. R. R. STAWELL (Melbourne) asked Dr. Mackeddie what happened in the case he had cited of lung abscess where surgical drainage had proved of no avail. He cited a case in his earlier experience where the bronchoscope had been successfuly used as a sound (intratracheal ether being used) in early surgical treatment of the lung. He advocated that surgery of the lung in severe cases of lung involvement was a thing to look for and tackle.

Dr. Mackeddie elaborated from further cases quoted the deceptive nature of the temporary improvement in complicated lung disease. The patient seemed well enough to be discharged, but "Lipiodol" often revealed a large unsuspected cavity; an abscess which had been accumulating, might rupture into the pleural cavity with very rapidly fatal issue. He testified further to the extreme value of "Lipiodol" in revealing cavities which X ray examination alone did not disclose.

Regarding artificial pneumothorax it was amazing how slow the advance in treatment by this method had been. Though it had been suggested in 1886, it had not been taken up at all in England until twenty years later and advance had been slow since then. There was no doubt

about its efficacy. The question arose as to when it should be applied, the class of case suitable for it and the best method of introduction of the gas. He favoured the needle rather than the trochar and cannula method. Air was the recognized gas, there being no advantage in the use of helium or bromoform. No danger arose of air embolism, because the gas was delivered only when it was certain that the point of the cannula had entered the pleural cavity.

The Cerebro-Spinal Fluid.

DR. OLIVER LATHAM (Sydney) read a paper on the examination of the cerebro-spinal fluid. In the first place he discussed the method of withdrawal of the fluid. He then discussed the naked eye appearance of the fluid and described the culture methods. He described the various types of cell found in the fluid and discussed their differentiation. He described the goldsol and other colloidal tests and discussed the Bordet-Wassermann reaction. He discussed the chloride, glucose and urea content and the significance of the variation of each. In conclusion Dr. Latham referred to various clinical conditions to the tests used and to the findings commonly observed in the cerebro-spinal fluid.

SECTION II.—SURGERY.

Raynaud's Disease.

DR. NORMAN D. ROYLE (Sydney) read a paper on the surgical treatment of Raynaud's disease and similar conditions. He had pointed out that vasodilatation followed the operation of sympathetic ramisection. Even after an interval of three years the limb on the side on which the rami had been divided, was distinctly warmer than the limb on the other side. These facts had been rediscovered by Adson and Brown and by Kanavel and Davis. Previous to the introduction of ramisection the conditions under discussion had been treated by periarterial sympathectomy, but Kramer and Todd had shown that the sympathetic nerves supplying the vasoconstrictors did not travel by means of the blood vessels, but were given off at irregular intervals. Ramisection or ganglionectomy of the sympathetic nervous system was the only treatment adopted in Raynaud's disease and allied conditions. Dr. Royle then discussed the anatomy and physiology of the vasomotor nerves. In discussing the anatomical basis of the operative treatment, he said that there was no necessity to remove the whole of the abdominal sympathetic trunk, as was done by Adson and by Kanavel and Davis. If it was desired to effect the whole blood supply to a lower limb, the laterally directed rami to the second and third lumbar nerves should be divided in addition to division of the trunk below the third lumbar nerve. In the cervical region an ordinary ramisection made a satisfactory operation. Dr. Royle presented a series of eight cases. The condition in four patients was *thrombo-angiitis obliterans* and the other four had been suffering from typical Raynaud's disease. In *thrombo-angiitis obliterans* the result was at first satisfactory, but as the acute hyperæmia disappeared there was often return of some pain. In Raynaud's disease the results were most successful and permanent. In all cases the operation had led to complete relief of symptoms. In one instance the result in the upper limb had not been so complete as in the lower. The patient had suffered from Raynaud's disease for about fourteen years and it was probable that there were actual structural changes in the blood vessels to account for the less satisfactory result. Dr. Royle reported the cases in detail.

MR. GORDON CRAIG (Sydney) asked Mr. Royle if he had had the opportunity for doing a ramisection on a patient with *endarteritis obliterans* which was usually of syphilitic origin. He referred to the condition of a limb after Syme's amputation had been carried out for gangrene due to this condition.

Dr. Royle's answer was that if it were done early then it would be satisfactory.

SECTION IV.—PATHOLOGY AND BACTERIOLOGY.

Comparative Pathology.

DR. L. B. BULL (Adelaide) read a paper on the value of comparative pathology in the problem of human disease. He said that the advances in the pathology of animal diseases had been great and that they would in the future prove to be of great significance to science generally and to medical research in particular. He referred to the recognition by Clifford Allbutt of the necessity for the study of comparative pathology and to the fact that he had been instrumental in establishing a section of comparative medicine in the Royal Society of Medicine. Dr. Bull pleaded for a greater interest in the subject. He referred to work that had been carried out on filterable viruses by the study of those associated with disease in lower animals, particularly pleuro-pneumonia in cattle. Heslop, of Melbourne, had recently shown that there were at least two types of this virus present in Victoria. This was the first time that it had been shown that a filterable virus might be divided into distinct types. Dr. Bull then referred to the toxæmias of pregnancy in sheep and said that a systematic investigation of this disease was necessary. He thought that by this means some light might be thrown on the causation of the condition in man. In milk fever of cattle inflation of the udder with air had proved useful. He thought that milk fever might possibly be associated with hypoglycæmia. He then referred to dysentery in lambs and said that *bacillus welchii* had been regarded as a possible causative factor. He also referred to osteo-arthritis and to botulism. He concluded by saying that every accurate observation on a pathological process in an animal was of value in the study of human disease. He illustrated this statement by the way in which he had been able to trace *Habronema* infection in the eye of a child.

DR. W. GILMOUR (Auckland) said that he had had no great experience in work with animals. He knew of one case of botulism in New Zealand, the source apparently being from a tin of peaches obtained in Australia. He had examined other tins of peaches from a similar source and had found that they were all in good order.

DR. C. S. M. HOPKIRK (Dunedin) said that there were one or two points raised by Dr. Bull concerning which he did not agree with him. In regard to filterable viruses Dr. Bull said that there were only two distinct types in pleuro-pneumonia. He said that there were two or more types in foot and mouth disease. Dr. Bull had described one case of toxæmia of pregnancy in one flock. In New Zealand it was found frequently and only in sheep on high-class pasture. By giving the sheep exercise the disease was overcome. Milk fever was overcome by the injection of air into the udder. He found that by injecting glucose intravenously a cure was also obtained and hence he thought that milk fever must have some association with hypoglycæmia. Vaccines were being used successfully in the treatment of dysentery in lambs. Osteo-arthritis was not found in adult sheep in New Zealand, but was common in lambs. It was due to *Bacillus pyogenes*. Botulism was not common in New Zealand, but there had been a suspicious outbreak in Christchurch. Parabotulism was unknown. Epithelioma of the nictating membrane in horses was unknown in New Zealand, but a similar condition was seen in cattle. Many cows, sometimes 50% of a herd, in New Zealand had difficulty in becoming pregnant. He felt sure that this was due to some inflammation of the cervix. Associated with this condition a cystic *corpus luteum* was found. There was some connexion other than bacterial between this and the cervicitis.

DR. P. P. LYNCH (Dunedin) said that there was much arthritis in lambs in New Zealand. He had found *Staphylococcus aureus* in cases of arthritis and he thought that possibly it was a metastatic infection from tailing.

PROFESSOR J. B. CLELAND replied on behalf of Dr. Bull that as far as he knew there were no recorded cases of botulism in Australia. Before lethargic encephalitis had been recognized, there had been obscure cases of diplopia

in Australia. These might have been encephalitis or perhaps botulism. The arthritis of lambs to which he referred, was a quite definite condition with no evidence of any preceding pyogenic infection. The pathology was similar to that of arthritis in man. With reference to the cystic *corpus luteum* he had seen a short time ago a cow after abortion in which there were symptoms resembling tetanus. At the *post mortem* examination it was found that abortion had occurred and there was also a cystic *corpus luteum*. It was suggested that this was responsible for abortion taking place. This showed the importance of veterinary pathology in relation to human disease.

The Wassermann and Kahn Reactions.

DR. E. F. D'ATH (Dunedin) read a paper in which he discussed the results of a comparative study of the Kahn and the Wassermann test in six thousand cases. For three years both the Kahn and the Wassermann test had been applied to each specimen of serum submitted for the latter test. The Kahn test had been carried out in the manner described by Kahn and for the Wassermann test certain modifications had been applied to the technique of Griffiths and Scott. Kolmer's new cholesterolized and lecithinized antigen had been used and a quantitative test had been carried out on every reacting serum by variation of the dilution according to Kolmer's quantitative technique. These specimens of serum had been divided into two groups. The first included serum which was being examined for the first time either as a routine or because of suspected syphilis. The second group included serum from patients who were regarded as syphilitic and who were undergoing antisyphilitic treatment. The specimens of serum in the first group had numbered 5,369 and in 5,309 instances the two tests had been in complete agreement. The specimens in the second group had numbered 631 and in 541 instances identical results had been obtained with the two tests. Dr. D'Ath described and discussed the cases in which agreement had not been reached. He went on to say that the main advantages of the Kahn test as compared with the complement fixation test were its simplicity and economy. The antigen, however, required as much care in its preparation and titration as did the antigen for the Wassermann test. The results from the Kahn test were occasionally difficult to read and still more difficult to interpret. The Kahn test appeared to be more likely to give false reactions. In the series no false reactions had occurred to the Wassermann test, but twenty-nine had been obtained with the Kahn test. In five cases of primary syphilis the Kahn test had yielded a reaction at an earlier stage than the Wassermann test. In thirteen instances an anticomplementary response had been obtained to the Wassermann test. In such instances the Kahn test was valuable in that a tentative report might be given pending the receipt of a further specimen. In untreated syphilis a doubtful response to the Wassermann test was rare, but this was not so with the Kahn test. Over the whole series of six thousand cases the percentage of absolute agreement had been 97·5. Dr. D'Ath concluded that the Kahn test constituted a reliable control for the complement fixation test. The latter was still the more valuable, but in order to obtain the best results both tests should be employed.

DR. A. B. PEARSON (Christchurch) said that he had had no experience of the Kahn test. He would have to adopt such a test because of its rapidity and simple technique. He thought it essential for routine work in a large hospital. With such a test one would be able to report on a blood specimen immediately without waiting to do a Wassermann test.

DR. W. GILMOUR (Auckland) said that he entirely agreed with Dr. D'Ath's work. He had tested one thousand patients by Kahn's method and had obtained 98% agreement with the result of the Wassermann test. He said it was easy to carry out, but at present its chief value was as a check to the result of the Wassermann test. In one or two cases of primary sore he had noticed the same facts as Dr. D'Ath. The reaction to the Kahn test appeared sooner and remained longer than that to the Wassermann test. All his results with the Kahn test were similar to those obtained by Dr. D'Ath.

DR. P. P. LYNCH (Dunedin) said that his results with the Kahn test coincided with those of Dr. D'Ath. He had carried out 3,400 tests; he applied the Kahn test one day and the Wassermann test the next day and compared the results. He got some disagreement. In treated patients it was more difficult to get agreement. In cases of primary sore the reaction to the Kahn test appeared sooner than did the Wassermann reaction. Patients under treatment reacted to the Kahn test for a longer period than to the Wassermann test. Taking the whole series of cases he obtained 95% agreement. He said that the Kahn test would not displace the Wassermann as a sole test, but it afforded a valuable check in alleged infections detected during the routine Wassermann examination. It helped the pathologist to give a diagnosis more confidently.

DR. G. PINESS (Los Angeles) said that he had been doing Kahn tests in his laboratory for some time to check the results of the routine Wassermann tests. His findings were similar to those of Dr. D'Ath's. At times he had noticed a precipitate in the second tube, although Kahn had stated that this should not occur. Others also had reported this finding of the precipitate. The Kahn test would never replace the Wassermann test, but it might be possible to find a better antigen or a new technique and so make the test more reliable.

DR. A. H. TEBBUTT (Sydney) said that in doing the Kahn test he had also had trouble with anticomplementary serum. He had thought that this was due to increased cholesterol, but later proved that this was incorrect. The anticomplementary qualities of serum increased on keeping. He found also that sometimes it was only a temporary quality of the serum. Anticomplementary serum was commoner among samples of serum yielding Wassermann reactions than among those that did not. It was interesting to note that Dr. D'Ath found that the response to the Kahn test in treated patients disappeared before the reaction to the Wassermann test, while Dr. Pearson and Dr. Lynch found the opposite. He agreed that the reaction to the Kahn test appeared earlier than that to the Wassermann test. He was very interested to hear that Dr. D'Ath did not obtain a single false Wassermann reaction.

Dr. D'Ath replied that his experience with anticomplementary serum was similar to that of Dr. Tebbutt. On keeping serum it sometimes became anticomplementary, while some anticomplementary sera prevented the reaction after storage. He had also noticed a precipitate in the second tube at times and this was one of the causes of doubtful reaction.

Thyreoid Tumours.

In a paper by DR. A. H. TEBBUTT, DR. V. R. WOODHILL and DR. F. S. HANSMAN (Sydney) on lateral accessory thyreoid tissues and their tumours, they found that the accumulation of evidence, anatomical and clinical, was in favour of the development in man of the whole thyreoid gland from the median pharyngeal *Anlage*. The tissue contributed by the fifth pharyngeal pouches, the ultimobranchial bodies, merged with the embryonic thyreoid and normally disappeared. There were two types of lateral accessory thyreoid tissue, firstly the nodules in close relation to the lateral lobes, the accessory nodules of anatomical literature, and secondly the nodules not closely related to the lateral lobes, frequently presenting a neoplastic histo-pathology and better differentiated as aberrant tissue. Four examples of this latter type had been met with recently in Sydney and in each case the nodules were undoubtedly neoplasms. All four patients were females and the nodules appeared only on one side of the neck and never crossed over. In two patients multiple nodules appeared along a line from the angle of the jaw down to the clavicle or sternum and some appeared to occupy lymphatic glands; others seemed to consist entirely of neoplastic thyreoid tissue. In both these the structure was that of a papillary adenoma, tending in one towards adeno-carcinoma. In the other two patients there were nodules which contained no lymphoid tissue; they consisted entirely of papillary adenomata of thyreoid tissue. Not in any case was there clinical evidence of any tumour formation in the thyreoid gland proper. Three of the patients remain in good health, though in two recurrences had taken place; one patient could not be traced. It was remarkable that there appeared to be fresh developments

of similar tissue without any anatomical relationship to the previous nodules. A complete and satisfactory explanation of these tumours had not been found by the authors. They suggested an excessive lateral migration of the thyreoid tubules very early in embryonic life and a distribution of thyreoid tissue in the mesenchyme of the side of the neck with complete separation from the lateral lobes.

Dr. A. H. Tebbutt, Dr. V. R. Woodhill and Dr. F. S. Hansman (Sydney) also submitted a paper on new growths of the thyreoid gland. They stated that it was admitted that this was an exceedingly complex and puzzling subject. In no organ or tissue was it more difficult to draw distinctions between hyperplastic and neoplastic processes or to decide whether a neoplasm was malignant or benign.

An overwhelming majority of thyreoid tumours were epithelial and the benign were commoner than the malignant. Marine had classified the benign epithelial tumours into simple or colloid adenomata, fœtal adenomata and an intermediate group, the classification being based upon the amount of differentiation into alveoli which ran more or less parallel with the iodine content and the response to iodine administration. He had differentiated these encapsulated tumours from the colloid nodular "areas," whose capsule consisted of condensed thyreoid tissue. At the same time, he had regarded the adenomata as only "partial tumours." The authors had not found this classification very helpful in practice. Types of microscopical structure tended to merge one into the other, though some adenomata showed a predominance of small colloid alveoli; other small solid groups of thyreoid cells presented at times a carcinomatous appearance; while others manifested a formation of tubules or columns. There was in addition to these various types of so-called fœtal adenomata another type of structure met with both in hyperplasias and in neoplasms, namely the papillary form. The papillary adenomata had been met with particularly in the aberrant lateral cervical tumours. There was a distinct tendency to adeno-carcinomatous development.

The fœtal adenomata met with were commoner in females, they had usually been present for some years prior to operation, were commoner between twenty and forty years, had not usually been removed because of toxic symptoms and had frequently been shelled out of the gland or easily removed without excising adjacent tissue. The microscopic features were pointed out in a series of photomicrographs. The authors wished to draw attention particularly to the peculiar connective tissue found in these adenomata and the differentiation from non-toumour thyreoid tissue might be helped by bearing in mind the following points. The subdivision of the tissue into lobules and also into the gland units of Williamson and Pearse was not usually to be found in the simple adenomata of the fœtal type. The blood vessels must, therefore, be arranged differently and they were found to be usually blood sinuses lined only by an endothelial layer, hence the frequency of hæmorrhages. The connective tissue of these adenomata was of a peculiar character suggesting a degeneration and it was usually more abundant than in non-tumour thyreoid tissue.

Passing on to the malignant tumours the authors found that histologically proved malignant tumours had been rare at the Royal Prince Alfred Hospital. The classification was fully discussed and the predominance of epithelial growths over sarcomata noted. Five examples were illustrated by photo-micrographs: a *carcinoma simplex* metastasizing in a cervical lymphatic gland, but not in the viscera in a patient who was alive after two years; three examples of papillary adeno-carcinomata, all fatal, death being due in two at least to visceral metastases; one fibro-sarcoma, death following from local extension.

No evidence of metastases in bones occurred in these patients. The authors spoke of the importance of early recognition and excision of all growing adenomatous nodules or masses, whether in the thyreoid or apparently separate from it. This was advised especially in people of middle age.

Dr. A. B. Pearson (Christchurch) said that he was very interested in Dr. Tebbutt's views on adenomata. He thought that the adenomatous masses were usually adenomatous nodules associated with functional disturbance. With regard to the peculiar connective tissue he had thought it was hyaline degeneration. The blood vessels were thicker structures like those found in new formed tissue and not in tumour formation.

Dr. W. Gilmour (Auckland) said that he had only had one case of a growth resembling true thyreoid tissue found some distance from the thyreoid. It had no connexion with the lymphatics. He had seen only one case of a malignant growth in a thyreoid and this was a fibro-sarcoma.

Dr. P. P. Lynch (Dunedin) said that during the year he had found two cases similar to those described by Dr. Tebbutt. He thought they were benign metastatic adenomata. One was in a child of fourteen years who had a gland which was thought to be tuberculous removed from her neck. On examination the histology was similar to that of the tumours shown by Dr. Tebbutt. He thought it was a metastatic growth from an adeno-carcinoma. At the periphery there were definite groups of cells in the sinuses of the gland. There was some enlargement of the thyreoid and this was removed. On examination the structure was found to be similar to that of the gland removed. Other glands were also found at a later stage. The other case was in a woman of thirty-five years who two years before had a mass of glands removed from the neck, but these were not examined histologically. She had masses of gland removed every six or eight months. He had examined some of these and they resembled those of the previous patient. At the first operation an encapsulated tumour had been removed from the thyreoid.

Professor A. M. Drennan (Dunedin) said that he was interested in the matter of thyreoid tumours. He regarded the nodule as hypertrophic changes, the result of exhaustion or damage to the gland substance. He admitted, however, that there was no reason why a tumour should not occur in the thyreoid just as tumours occurred in the breast. A great number of thyreoid enlargements were seen in New Zealand and he thought that many of these nodules were an effort to compensate for damage to the gland. Chemical examination of thyreoids had been carried out in New Zealand and he would like to know if Dr. Tebbutt had done any similar work. He had examined specimens of carcinoma of the thyreoid and these were free from iodine. It was very difficult to know when one had a real tumour or not. He would like to ask Dr. Tebbutt if in association with thyreoid tumour there was much pathological change in the rest of the gland.

Professor J. B. Cleland (Adelaide) said that he had not seen many definite adenomata in the thyreoid. With regard to the lateral nodules found in the neck he had performed an interesting *post mortem* examination in which he found large nodules in the region of the clavicle. There had been no clinical note of any enlarged glands in the neck. The patient had also suffered from extensive carcinoma of the stomach. On section the glands were found to be quite unrelated to the gastric carcinoma, but resembled thyreoid tissue. He had seen another tumour in which there was a nodule of thyreoid tissue in the lower jaw and yet another in the middle of the tongue. Dr. Bull had seen a growth which had been removed from the femur, and this proved to be a secondary deposit from a malignant growth of the thyreoid.

Dr A. H. Tebbutt replied that with regard to Dr. Pearson's remarks about the connective tissue changes being of a hyaline nature, he was not satisfied that this was the case, but was not prepared to state what kind of change it was. He was going to investigate this matter.

In reply to Dr. Lynch and Dr. Gilmour he said that he had not dealt with accessory tumours in the mid-line of the neck nor with accessory tissue in lateral areas. He dealt only with tumours far out in the neck. In his cases there was no evidence on palpation of thyreoid disturbance. He had to confine himself to embryological data. In reply to Professor Drennan he said that he had paid no attention to the chemical side. Marine had shown that in tumours of the thyreoid there was reduced iodine content proportional to the differentiation of the tumour and that the response to iodine therapy was also proportional to the differentiation of the tumour. The rest

of the gland was not usually removed along with the tumour so that he could not say anything regarding the pathological changes in it. He thought that the thyreoid atrophied when there was tumour growth. In the early stages of the growth of adenoma proliferation was the chief change. When proliferation stopped, thyroxin might be formed in the tumour. It was very difficult to distinguish between adeno-carcinoma and papillary adenoma of the thyreoid. He thought, however, that he had definitely shown that in adult adenomata the tendency was towards capillary formation.

SECTION VI.—OPHTHALMOLOGY.

The Teaching of Ophthalmology.

DR. LEONARD J. C. MITCHELL (Melbourne) read a paper on the teaching of ophthalmology to medical students. It was difficult to obtain the interest of the student and to hold it and to present the various ophthalmic conditions in a way that would convince the student of their importance. Dr. Mitchell outlined the teaching which he thought the student should receive. This began with the routine examination of the normal eye and this was followed by a clinical talk on some ordinary condition. The teacher should realize that it was impossible to deal with the subject of refraction, if any time at all was to be devoted to the treatment of conditions encountered in general practice. He laid emphasis on the necessity for instruction in the use of the ophthalmoscope. As many normal fundi as possible should be examined before attention was paid to pathological conditions. Dr. Mitchell then pointed out that the student should be taught the various methods of examining an eye such as eversion of the eyelids and the use of drops. Students should see some operations on the eye and these would be valuable if only they learned the value of cocaine and gained a wholesome respect for an eye.

DR. A. M. MORGAN (Adelaide) said that after seventeen years' experience in clinical teaching his aim was to teach students to see simple things. The university authorities were inclined to eliminate the examination in ophthalmology which he thought was a great mistake. He taught students to recognize simple conditions of the eye, so that if they happened to be practising in country districts they would be able to distinguish between conjunctivitis, iritis and glaucoma and send their patients early to the specialist. He did not recommend the teaching of refraction, but thought that they ought to be able to recognize hypermetropia, astigmatism and myopia. He thought it was useless to teach the operation of cataract. He taught removal of foreign bodies, the operation for chalazion and such simple operations. He insisted that every student should see the fundus properly. He made each one draw a picture of the disc and vessels of the retina as he saw it. He emphasized the point that when they went out to practice, they should send patients with squint to the specialist at an early stage and not wait to see if it would clear up without treatment.

SIR JAMES BARRETT (Melbourne) said that when the curriculum for medical teaching was being discussed and the course extended to six years, he had suggested that all general subjects should be taught in the first five years and the sixth year should be devoted to specialists' subjects and treated as post-graduate work. In Melbourne in conjunction with the Professor of Physiology he had taught students the use of the ophthalmoscope, laryngoscope and the otoscope while they were studying physiology. Refraction work was also taught in an elementary way. This training he found was successful as a student was able to proceed to the out-patient department for his clinical teaching knowing how to use the ophthalmoscope. He thought that the teaching of ophthalmology was a very important subject in medicine and he congratulated Dr. Morgan on having an endowed chair of ophthalmology in the Adelaide University.

DR. A. J. HALL (Dunedin) said that lectures should always be followed by practical demonstrations of the subjects discussed. He said that in Otago University the Professor of Physiology tried to render every student familiar with the use of the ophthalmoscope. He did not believe in teaching students refraction work or operations. He thought that it was important for the student to be able to recognize the normal fundus. Afterwards when he became a house physician or surgeon he could learn to recognize diseased conditions of the fundus. He urged the teaching of general diseases, such as cardiac and renal diseases, diseases of the accessory sinuses, in their connexion with changes in the eye. He thought it was necessary that a student should be as familiar with the ophthalmoscope as with his stethoscope.

DR. L. S. TALBOT (Timaru) said that he thought it would be a good thing to let students examine the fundus with the electrical ophthalmoscope first and then to proceed to the use of the direct and indirect methods with the ordinary ophthalmoscope.

DR. H. F. SHORNEY (Adelaide) described his methods of teaching at the Adelaide University. It was a great mistake to do away with examinations. He thought that students soon gained a knowledge of refraction work. He thought that an important point was the picking up of the red reflex. All his students had an electrical ophthalmoscope, but he preferred the ordinary one to enable students to pick up the red reflex.

DR. G. E. O. FENWICK (Auckland) thought that it was no good teaching refraction. Students should be taught the difference between atropine and homatropine.

DR. W. E. CARSWELL (Dunedin), DR. A. G. TALBOT (Auckland), DR. E. L. MARCHANT (Wellington), DR. W. M. MACDONALD (Dunedin) agreed generally with the remarks of previous speakers, especially the idea of Sir James Barrett that students should learn the use of the ophthalmoscope while doing their physiology course.

SECTION X.—NAVAL AND MILITARY MEDICINE AND SURGERY.

Recruiting for War.

LIEUTENANT-COLONEL A. R. D. CARBERY, C.B.E., V.D., New Zealand Medical Corps Reserve, read a paper on some medical aspects of recruiting for war. He said that during the great war New Zealand had recruited 124,211 men and of these 92,860 had embarked for service overseas. The numbers recruited had formed 52% of the male population between nineteen and forty-five years of age. A total of 1,167 men had been found unfit on arrival at overseas bases and had not reached a zone of active operations. The number of men who were the subjects of previous disabilities and undoubtedly should not have been recruited, probably exceeded 3,000. Lieutenant-Colonel Carbery referred to the economic loss from over-recruiting and to the serious neglect of examiners to reject men who were below standard. He had examined the completed records of one hundred men who were enlisted in Class A and who died of pulmonary tuberculosis in New Zealand after service. Nearly one half had been below the average weight and 36% were below the prescribed minimum in chest measurements, while 54% were below the standards both in weight and chest measurements in proportion to height and age. If to this group were added the figures from one hundred pensioners who died from various causes other than tuberculosis. it would be seen that 43·5% of the recruits were definitely below the standard of physical measurements prescribed. Lieutenant-Colonel Carbery held that men below the prescribed standards in weight and chest measurements should be classified "B3," if otherwise acceptable. The acceptance of Class C men for special training was of doubtful value and they should not be considered to be fit for service overseas, unless they showed a considerable improvement in weight under graduated training. He thought that the attestation papers required remodelling. The pulse and respiratory rate in relation to exercise should be noted and special records should be kept of the nervous, glandular and genito-urinary systems. The ears should be examined in all cases, for 4·82% recruits previously found fit had been invalided out of the British army on account of chronic *otitis media* during the first three months of training. He recommended that medical officers selected for recruiting for mobilization should be specially trained in peace time and a recruiting board should

be set up in war time. This board should consist of medical practitioners acting as principal medical officers to life assurance companies; their experience would fit them for this duty.

MAJOR-GENERAL BARBER, Director-General Medical Services, Commonwealth Military Forces, referred to certain aspects of Colonel Carbery's paper which also affected citizen forces. He spoke of tuberculosis occurring in recruits shortly after enlistment and of the consequent charge on the superannuation fund of the Commonwealth. Mental deficients also became a burden to the community. He urged the necessity of training medical officers in the methods of examination of recruits.

COLONEL TRACEY INGLIS, Director Medical Services, New Zealand Military Forces, stated that there was no doubt that the medical examination of recruits in the early stages of the late war had broken down mainly owing to the rush methods which had to be employed. The results obtained later by medical boards had been much better. In his experience the majority of the unfit who had been drafted into the Army, had enlisted in the early months and he considered that it was the duty of medical officers to correct this during any future mobilization. As regards New Zealand the authorities were at work on a new medical examination form which would include information lacking in the form used in the late war, especially regarding the ratio of pulse rate and respiration after exercise, the state of the nervous system and the examination of the urine. In the future the position would probably be met by an individual examination before the recruit entered a mobilization camp, to be followed by a strict and thorough examination by a medical board. He considered that in many instances a period in a mobilization camp would be necessary to detect latent disabilities.

COLONEL J. S. PURDY, D.S.O., V.D., Australian Army Medical Corps Reserve, pointed out that the problems of the paper under discussion suggested the advantage of a combined meeting with the Section of Preventive Medicine. He referred to the statement made recently by Major-General Beveridge that medical rejections on enlistment had increased from 20% in 1912-1913 to 35% in 1920-1921; the rate had become even higher. The findings of the commission on physical deterioration at the end of the South African war and the Gallway report at the end of the great war revealed that one recruit in nine was a chronic invalid quite unfit for any service. This indicated the need for improving the standard of physique of the people as far as could be done by physical education and training. The increase in the percentage of rejections for disabilities attributable to faulty nutrition and development should be regarded as a sign the diet of the people needed improvement.

LIEUTENANT-COLONEL HARDIE NEIL, New Zealand Medical Corps, stated that his observations of primary tentative recruiting systems under which medical officers were paid for each individual case, showed that consideration of border line cases was quite inadequate. As a ready mean of detecting those below the standard in height, weight and chest measurement, the Pignet factor was useful. The weight in pounds *plus* the maximum chest measurement in inches *minus* the height in inches yielded a number of which 100 was the pivot or comparative normal. Below 100 the physique was poor or bad, 100 to 110 fair and above 110 good.

His experience had taught him that the number of ultimately proved useful men among those of poor physique was so few in comparison to the useless that the rejection of all these men was necessary in the interests of the fighting force and the finances of the country. In those claiming pensions for disability for catarrhal or infective ear lesions, he contended that when recourse could be had to previous information, the claimant's war history was almost invariably unsupported. He pointed out that those between the ages of twenty and thirty years drawing a pension for chronic ear disease that was really of previous origin, would in the course of pensioning draw about seven hundred pounds and this showed the necessity for skilled examination of the ears in recruiting. Colonel Carbery had stated that those drawing pensions for ear disability in New Zealand comprised 2·9% of the total. He estimated that 70% of these men were not morally pensionable, as natural evolution of the disease was overlooked by the board. Aggravation or acceleration might have been allowed for. In his opinion this would operate in only about 10%. Speaking in reference to disordered action of the heart after experience in ambulances and on pensions business, he would arbitrarily reject any man with a pulse rate over 90.

LIEUTENANT-COLONEL A. R. FALCONER, C.B.E., New Zealand Medical Corps, considered that Colonel Purdy had struck the right note. The State medical examination of school children and military cadets gave the opportunity of instituting permanent medical case records which would enable early preventive measures to be taken regarding the individual and would also be of great value in ascertaining military fitness of a recruit in time of war. In America, he stated, they insisted at the universities on a medical examination of entering students and steps were then taken to overcome any physical disabilities. The medical oversight of the students in their recreations and studies continued during the whole course at the university.

Speaking as one who had considerable experience as president of a recruiting and an invaliding medical board, he considered that good work had been done by the home recruiting medical officers. He contended that it was impossible in the rush examination at a drill hall to do more than make a tentative preliminary examination and that the real test should be a period of training in camp.

His experience of the examination of invalid soldiers who returned from overseas with a certificate of medical unfitness due to prewar disability, led him to believe that a "non-try-out" in camp was a large factor in their conditions being overlooked. He drew attention to the fact that a term of three months was often insufficient to enable the question of determining unfitness of a probationer nurse to continue training in public hospitals and that recently the New Zealand Trained Nurses' Association had asked the Hospital Department to increase the term of probation to six months. It was thus obvious in comparison that the short preliminary examination in a drill hall, unchecked in camp, was quite insufficient for the responsible decision being given for a soldier's departure overseas.

After Histories of Tuberculous Soldiers.

MAJOR W. AITKEN (Military Sanatorium, Cashmere Hills) recorded the results of an inquiry into the effect of sanatorium treatment of tuberculous military patients. The New Zealand Government had dealt most liberally with these men. One difficulty had been experienced. After having left the army the men were as a rule tired of discipline and objected to the rules of the sanatorium. The public sympathized with the patients in this respect and the governmental authorities were too lenient. The total number of patients discharged after full treatment between the years 1920 and 1924 inclusive was four hundred and twenty-one. A considerable measure of success had been attained in the patients whose disease was in the first or second stage. Arrest had been secured in 83·6% of patients in the first stage; no less than 72·8% were at work. Of the group II. patients 53·6% had had their disease arrested and 43·4% of the men were at work. That treatment was of little avail in advanced disease was shown by the high mortality of those admitted in the third stage of the disease, namely 75%. Dr. Aitken considered that his analyses revealed the utility of the institution and the value of good nursing in alleviating the sufferings of those whose condition was too far advanced on admission to admit of improvement.

LIEUTENANT-COLONEL A. D. CARBERY, C.B.E., V.D., New Zealand Medical Corps Reserve, pointed out that the diagnosis was so difficult in early tuberculosis that the results of treatment in sanatoria must be accepted with reserve. Diseases of the oro-pharynx, apical collapse due to nasal obstructions and nasal sinus disease and above all latent syphilis had been confused with the first stage of lung tuberculosis only too frequently.

Stereoscopic radioscopy of the thorax was, he considered, of equal importance with clinical examination and some perfected technique of complement fixation for tuberculous

infection was urgently required. The Wassermann test should be done as a routine.

LIEUTENANT-COLONEL HARDIE NEIL, New Zealand Medical Corps, congratulated the author of the paper on the excellent results recorded. He considered that the obviously scientific method of discriminating the groups and of recording results made the paper most valuable. The great value of the contribution was the comfort it gave to the taxpayer who had been called upon to contribute liberally to the support of the tuberculous patient. In his opinion the greatest importance, however, was to the future administrators who would have a sound basis for the policy in regard to recruiting precautions and treatment. Thus the very expensive administration and treatment could be curtailed and costly experiments in the war eliminated.

Major W. Aitken, in reply to Dr. Hardie Neil, who had mentioned the question of attributability pointed out that the final decision in this question rested with the War Pensions Appeal Board, a body composed of a Supreme Court judge and two medical practitioners who, as far as he knew, had given no special study to tuberculosis. He pointed out that Colonel Carbery had stated that the percentage of pensioners accepted for tuberculosis was higher in New Zealand than in other allied countries and considered that the fact that the authorities in New Zealand were very sympathetic towards applicants for pensions due to this disability, would help to explain this higher rate. In other countries clear evidence was required by the authorities before a pension was granted. Major Aitken also explained that all patients in his series in whose sputum tubercle bacilli were not detected, were closely examined and scrutinized for the purpose of justifying the diagnosis of lung tuberculosis. Routine examination of the nose and throat was carried out in all cases for the purpose of recognizing chest disease depending on chronic nasal conditions. Sanatorium physicians were limited in their clinical investigation owing to the fact that sanatoria were usually medically understaffed. When the staffs of these institutions could undertake an intensive study of each individual patient he was sure they would then produce better results than those obtained at present.

TUESDAY AFTERNOON, FEBRUARY 8, 1927.

COMBINED MEETING.—SECTIONS X. AND XI.

The Cripple from War and the Cripple from Industry.

DR. H. S. NEWLAND (Adelaide) opened the discussion by attacking the problem of the cripple from war. He divided his subject into three parts. In the period before the battle orthopædic measures were of vast importance in the event of an army being conscripted. Physical unfitness could be removed in certain circumstances and the persons who would otherwise be refused, would be rendered fit for service. The conditions for which treatment might be employed, were damaged semilunar cartilages, *hallux valgus*, *pes cavus*, Dupuytren's contraction and so forth. In the period of the battle it was essential to restore the wounded soldier to his unit or to civil life with the least disturbance of function. Efficient orthopædic surgery meant much to the man-power of the nation. The efficiency should be extended to the advanced units as well as to the orthopædic centres at the base. The excision of wounds before contamination had led to infection was of paramount importance. Dr. Newland warned against the use of the tourniquet or a tight bandage. The Thomas's splint had been of the greatest value during the war. Apart from morphine and anæsthetics it had proved itself to be the best means of saving pain. At casualty clearing stations the walking wounded received less prompt attention than the men on stretchers. From the point of view of man-power it would be more advantageous to treat the walking wounded before the more severely wounded. Dr. Newland urged that a high degree of skill was demanded of the surgeons in the casualty clearing stations. In the period after the battle wounds were either healed, healing aseptically or infected. Sepsis was the foe of function. Function should be the goal of the orthopædic surgeon. In conclusion Dr. Newland referred to the value of curative and educational work that had been carried out in the orthopædic centres. Productive educational treatment was more valuable than were exercises with tools.

DR. R. B. WADE (Sydney) started the discussion on the cripple from industry. He pointed out that there were no English nor Australasian statistics disclosing the number of cripples in the civil community nor the nature of their disability. Assuming that the conditions in America were analogous to those in New Zealand and Australia he sought information from the figures published in Cleveland, New York and Chicago. Among every thousand inhabitants there were six cripples. Of the cripples 30% were under twenty-one years of age. The defects were caused by disease in 69%, by accident in 4%, by congenital influences in 25%. The causes acted at the time of birth in 25%, between the ages of one year and five years in 58%, between six and fifteen years in 15% and between sixteen and twenty-one years in 2%. The causes were infantile paralysis in 51%, spastic paralysis in 16%, congenital defects in 10% and tuberculous disease of bones and joints in 7%. Amputations, osteomyelitis and muscular dystrophies accounted for 16%. Ninety out of every hundred cripples had disabilities of the legs and 20% had disabilities of the arms. If these figures could be applied to Australasian conditions there would be nine thousand cripples in New Zealand and thirty-six thousand cripples in Australia.

In considering the question of medical treatment and scholastic and vocational education Dr. Wade found that ample provision existed in the orthopædic and other departments of the public hospitals for the adequate surgical treatment of every cripple in the community. The supply of competent orthopædic surgeons was extending. The reason why some of the cripples did not receive orthopædic treatment, was that their parents were either apathetic or hopeless. On the other hand the problem of the academic and vocational education was much more difficult. In Great Britain and in America societies had been formed to make provision for this education. It had to be remembered that the cripple had to be under orthopædic treatment during the ordinary school years. He was handicapped in life on account of his disability and it was therefore doubly important that he should receive academic and vocational education. Dr. Wade pointed out that while it was undoubtedly a function of the State to provide these educational facilities, it would be necessary in the first place for orthopædic surgeons who came into intimate contact with crippled children, to awaken the interest of the public in the matter. Once this was done, the necessary legislation could be passed. He pleaded for the institution of voluntary societies to safeguard the interests of the cripples.

MAJOR-GENERAL G. W. BARBER, Director-General Medical Services, Commonwealth Military Forces, stated that as far as he could ascertain Thomas's splint was not in universal use in mining and timber districts and on the railways in Australia, places where its use would be of much importance.

COLONEL D. S. WYLIE, New Zealand Medical Corps, traversed the work that had been done for soldiers and crippled children in New Zealand. A complete orthopædic unit had been sent out from New Zealand after the war, consisting of surgeons, mechanics, plaster-workers and assistants. The experience had been that orthopædic treatment must be provided much earlier, as it was not until 1918 that it had been put on a satisfactory basis in New Zealand. By that time crippled men requiring treatment had been scattered throughout the country. Orthopædic hospitals had been established at Christchurch, Trentham and Rotorua. As soon as the soldier patients had been discharged from the hospital at Rotorua children had been admitted. In the South Island crippled children had been catered for at the public hospitals at Christchurch and Dunedin. In all 150 children were treated. Facilities for education had been provided for the children as well as special vocational training.

He did not think that any special propaganda was necessary as the relatives of these children would disperse

the knowledge of the results obtained and thus educate public opinion.

He dealt with the crippling which resulted from septic wounds in industry and mentioned that because an injury was "only a septic finger," it was often treated lightly. He thought that better treatment should be instituted in the initial stages, especially from a physiotherapeutic point of view as many of the patients suffered great disability at a later period.

Dr. N. D. Royle (Sydney) suggested that some arrangement should be made with workers' unions and similar bodies. As long as a man was receiving a pension, the question of cure was of minor importance to him. He suggested that a curative workshop for industrial cripples would be a benefit just as education for a crippled child was of economic benefit to the State.

Dr. J. Renfrew White (Dunedin) thought that no special campaign was necessary in New Zealand as the public had seen the results of orthopædic treatment and knew where such treatment could be obtained. He paid a tribute to the Department of Health and hospital boards for the manner in which they dealt with the recent epidemic of infantile paralysis in New Zealand. He thought that a follow-up system should be instituted to prevent deformities occurring after a number of years.

Speaking of the cripple of industry he thought that much could be done and that there was great scope for better treatment especially in compound injuries. If any propaganda campaign were necessary, it should be in the direction of the education of insurance company managers who should take an interest in the early stages and progress of the affections. He emphasized the necessity of teaching younger practitioners and country practitioners the elements of orthopædic surgery, so that they might know what disabilities to expect.

Dr. F. F. A. Ulrich (Timaru) thought that until the principles learnt in the war had been taught and assimilated, practitioners would be lacking in what he termed orthopædic sense.

Dr. A. Owen-Johnston (Invercargill) thought that a great deal of crippling in industry was preventible, but he blamed the insurance companies who kept on paying and were not concerned whether the patient was being well treated or, for that matter, treated at all. He mentioned that in Vienna a special hospital had been opened and subsidized by the insurance companies. Treatment of industrial injuries at these hospitals was compulsory and a saving of a sum in the proximity of £18,000 had resulted in one year.

Dr. J. S. Purdy (Sydney) dealt with the introduction of the *Workers' Compensation Acts* in Queensland, Western Australia and more recently in New South Wales, with the liability for payment by the employer of up to £50 for medical treatment. He thought that the fact that the employers were covered as a rule by insurance companies (in the case of Queensland the Government had the monopoly of industrial insurance) made the insurance companies recognize the need for the establishment of large orthopædic centres in these cities. In Birmingham the insurance companies subsidized such a centre. It seemed to him that in the future there would be such centres in all the large Australian cities to which such patients could be drafted from the general hospitals.

Dr. A. R. D. Carbery (Wellington) said that experience in France had demonstrated that casualties on the march were frequently due to pre-war orthopædic disabilities. He condemned orthopædic treatment for prospective soldiers as it tended towards malingering later. He would exclude such men from acceptance for active service in the infantry.

Combined Meeting—Sections V and VIII.

Delinquency.

Dr. Harvey Sutton (Sydney) included the subject of truancy in his analysis of the incidence, significance and social aspect of delinquency. His experience was gained at the Children's Court in Sydney, at the Truant School in Guildford and at the office of the Department of Education. Neglected or uncontrollable children and juvenile offenders were dealt with by the court up to their eighteenth birthday. The majority of the offences were trivial, but 40% were serious. About 18% of the convicted children were sent to institutions, boys under fourteen to the Mittagong Farm Home or to the Truant School and those over fourteen to the Training School at Gosford. Dr. Sutton pointed out that physical defects of vision, of hearing, of the throat and nose, of the heart as well as hernia and epilepsy were commoner among delinquent children than among normal children. Gonorrhœa was very rare among normal children, but was found in 0·3% of delinquent children. He associated these defects with abnormal conduct, wandering attention and instability. Delinquency was largely a problem of industrial life, of the community living in cities. The apex of the curve of delinquency was between the ages of fourteen and fifteen in boys and between fifteen and sixteen in girls. Failure of parental control and influence acted indirectly as a cause. The importance of feeblemindedness had been exaggerated, but it should not be neglected. The chances of a mental defective becoming a delinquent were at least twelve times as great as that of the normal boy.

Dr. Sutton outlined a programme for handling the problem of the delinquent child. Every delinquent should be subjected to investigation by a psychiatrist, a psychologist and a probation worker. He suggested that the psychiatrist should make a full physical examination, he should seek for anomalies of growth indicating disturbances of the endocrine glands, he should pay attention to any signs of altered mentality as reflected in behaviour, he should ascertain whether or not the delinquent was infected with a venereal disease and he should work in collaboration with the psychologist in arriving at a diagnosis of feeblemindedness and at an estimate of capacity for responsible conduct. The psychologist should apply group tests to eliminate the normal children and estimate the intelligence quotient and mental age by means of Binet's and other tests of the abnormal. The probation officer should undertake the social work connected with the problems. He should endeavour to neutralize the "gang" or "push" influences. Dr. Sutton was anxious to break down the watertight compartments into which the workers in this field had often fallen in the past.

Dr. S. J. Minogue (Gladesville) read a paper dealing with the results of his observations and study of the mentality of criminals. He included among the criminal insane mental defectives. He stated that in New South Wales mental deficiency in persons convicted of crimes was often overlooked and undiagnosed, because the estimation of the prisoner's mentality was left to the non-expert observation of the judge, and to the opinion of the jail surgeon who had usually no special training in psychiatry. High-grade defectives committed crimes of violence, murder, sexual offences, theft and robbery. The moron rarely committed sexual offences, but indulged in burglary and theft. These mentally defective criminals were frequently model patients in hospitals and in prisons. They were excellent workers and were amenable to discipline. It was illogical to punish these individuals for crimes for which they were not responsible. The law fixed the age of fourteen for full mental development. The majority of these individuals had a mental age of far less than fourteen. The mental condition of every prisoner should be determined by expert observers. In the next place he dealt with various forms of insanity among the criminals. As a rule the crime was the direct result of the insanity. Some criminals became insane while in prison, but this was relatively rare. He instanced the types of crime committed by persons suffering from various forms of insanity. In the next place he turned to the subject of moral imbecility. The moral imbecile was often a person of superior intelligence with no obvious signs of a psychosis. He was quite incorrigible and irresponsible. Although he admitted that his opinion conflicted with the principles he was advocating, he was inclined to deal with the moral imbecile in jail. In regard to the victim of irresistible impulses, he had no hesitation in classing him as insane, but he pointed out that the diagnosis was

extremely difficult and uncertain. He held that all criminals should be examined in regard to their mental condition and that the decision of the psychiatrist should be accepted as to a prisoner's sanity. Many sane prisoners could be reformed by a full psychological examination and by the correction of vicious tendencies.

DR. ST. LEGER GRIBBEN (Auckland) spoke of the modern methods that had been introduced in Great Britain and elsewhere in the endeavour to reform the criminal. Although heredity played a part in the causation of criminality, environment was a much more powerful factor. In England all the larger prisons had resident medical officers, while the Borstal Institute at Rochester had a medical practitioner as its administrative head. The importance of an understanding of the offender's mental standard was recognized in connexion with the estimation of his responsibility. In dealing with delinquents three factors had to be taken into account. These were classification, individualization and a practical knowledge of the criminal mind and outlook. Mercier had pointed out that the expert criminal's profession was a commercially sound one, since the risk of detection and punishment were small as compared with the prospect of gain. This fact had to be taken into account. In prison the criminal realized that the authorities were in power. Discipline and firmness were essential. Dr. Gribben referred to the "honour system" which had proved to be a sound policy. The public was not interested in the welfare of criminals after their sentence had been served. A small but devoted band of workers was engaged in easing the way back to civil life of those who had come into conflict with the law. These people were often anxious to make a fresh start.

COMBINED MEETING.—SECTIONS II., IV. AND XII.

The Diagnosis and Surgical Aspects of Hydatid Disease.

DR. C. H. KELLAWAY (Melbourne) in the opening paper discussed the immunological tests of hydatid disease. Complement fixation had been applied to hydatid disease by Ghedini in 1907. At the Walter and Eliza Hall Institute in Melbourne it had been found by Fairley to be a specific test. The serum of some patients failed to provoke a reaction on account of an insufficient absorption of antigen. The technique of the test had been improved by Dew, Miss Williams and K. D. Fairley. The precipitin test had been adapted to hydatid fluid by Fleig and Lisborne in 1907 and had first been investigated in Australia by Chapman, Welsh and Storey in 1909. An improved antigen had been prepared by Fairley in 1923. Unfortunately the immune serum became inactivized at 60° C., but in other respects it was a reliable and specific phenomenon. Casoni's skin reaction had been used by Fairley. In 1923 Dew announced that the important part of the reaction was the wheal. This constituted the immediate reaction. The delayed response took the form of an erythema with deep induration due to subcutaneous œdema. Dr. Kellaway described some experiments that he had performed on himself. He had sensitized himself by four subcutaneous injections of hydatid fluid at intervals of three days. An immediate wheal had appeared in response to the intradermal test, but no delayed reaction. After a year an immediate reaction could be elicited, but no delayed reaction. He concluded that the immediate wheal represented a type of response associated with the process of sensitization or desensitization. In summing up the experience gained by the investigations at the Walter and Eliza Hall Institute Dr. Kellaway stated that in the very early stages of hydatid infestation the only test likely to yield diagnostic information was the Casoni; an immediate and a delayed reaction might be obtained. At a later state when the cyst was uncomplicated but large, there was usually no eosinophilia, but the intradermal reaction could be elicited. As Dew and Dévé had shown daughter cyst formation was the result of an accident to the cyst. When this occurred eosinophilia was noted and a response was obtained to the complement fixation test. At this stage the intradermal test might either fail to yield a reaction or there might be an immediate but no delayed reaction. After the death or removal of the parasite the power of complement fixation soon disappeared, while the power of reaction of the skin lessened very gradually. The Casoni test was of little value when there was a history of previous infestation. In uncomplicated cysts the complement fixation test was of the greatest value; the simpler precipitin test could be used in laboratories in which the facilities for the former test were unsatisfactory.

PROFESSOR C. E. HERCUS (Dunedin) dealt with certain legislative suggestions. He pointed out that hydatid disease was notifiable in New Zealand, but was not in Australia. He suggested with the concurrence of the meeting that a proposal should be put before the final meeting of Congress that legislation should be introduced in Australia to make hydatid disease notifiable and that there should be stricter attention paid to notification in New Zealand. He further suggested that there should be greater control of slaughter houses, especially in regard to the boiling of offal and the exclusion of dogs. Public propaganda should be promulgated as much as possible. On registration of dogs full information should be given as to the importance and prevalence of the disease and the mode of infection. The importance of vermifuges should be made clear especially to those of the farming community.

DR. P. D. CAMERON (Wellington) pointed out that in intrathoracic hydatid cysts which usually occupied the lower part of the lung, the shadow in the skiagram was always circular or slightly elliptical. After rupture MacCormick's sign was often present. A dead cyst might be calcified and the density of the shadow was then increased. As a rule the radiographic characters of hydatid cysts were unmistakable. Occasionally, however, the cyst had to be differentiated from calcification of the pericardium or secondary malignant tumours. This might be difficult. Cysts in the abdomen were less easy to recognize. The contrast could be increased by inducing pneumoperitoneum, but this was associated with some risk. As an indirect sign was the elevation of the right half of the diaphragm. Care had to be exercised not to confuse this sign with a protuberance of the mesial half of the right segment of the diaphragm. At times deformity of the hollow viscera was detected; this was produced by pressure of the cyst.

Massive doses of X rays were required to kill the hydatid parasite. The risk of damaging the liver and suprarenal bodies was too great to justify this treatment.

SIR GEORGE SYME (Melbourne) dealt with the surgical aspect of hydatid disease. He said that in 1879 Lindemann had published an account of an operation he had performed in 1871, by the method known by his name. In 1877 Saenger independently described a similar method, but Lindemann was the first actually to operate. In 1878 Knowsley Thornton recorded a case, the first of multiple abdominal hydatids treated by abdominal section without drainage. In 1891 C. J. Bond recommended that certain abdominal cysts could be treated by incision and replacement of the cysts, provided the cavity be thoroughly evacuated and the inverted edges of the incision sutured, to prevent subsequent entrance of a coil of intestine. He saw no reason why they should not deal with cysts in the liver and other organs in the same way, provided suppuration had not occurred. In 1907 Hamilton Russell published his method of immediate closure after filling with saline fluid and in 1923 wrote that while not universally applicable, when carried out with reasonable care, the method was safer and better than any other method known to him.

The ideal treatment consisted in extirpating the parasitic cyst with its contents and pericyst entire, closing the incision without drainage. This ideal was seldom attainable. The surgeon should be prepared to modify his methods according to circumstances. The older the cyst, the more difficult the ideal technique would be. It could be adopted in cysts situated in the omentum, in the mesentery and in the subperitoneal and other connective tissues except bone. If the cyst and pericyst could not be extirpated, the ideal was to remove the parasite and to close the incision without drainage. For cysts in the spleen and kidney, Bond's operation was the operation of election

and also for very small cysts in the liver. For most liver cysts Russell's method was the operation of choice and could be carried out even if the cyst was infected. He preferred to anchor the cyst wall as well. While drainage should be avoided if possible, in most lung cysts it was safer to drain. As a general rule the cyst should be formalized before emptying, but this was not essential, and it was safer not to leave a formaldehyde solution in a closed cavity.

DR. H. T. D. ACLAND (Christchurch) dealt with the use of formaldehyde in the attempt to destroy the parasite. He asked Sir George Syme whether he regarded it as safe to formalize the peritoneal cavity.

MR. HAMILTON RUSSELL (Melbourne) stated that formalin introduced into the sac exerted a lethal effect on the scolices, whereas a saline solution had a purely mechanical effect. The ideal to aim at was to kill the hydatid. He discussed the question of treatment of a patient with a large hydatid cyst who was jaundiced, had pain and a temperature of 40° C.; after the cyst had been opened, a slimy, gelatinous, bile-stained material escaped. He suggested that the cyst should be thoroughly washed with sodium chloride solution and closed. He had drained one of these cysts and later the patient had died. Another patient he had treated as above and he was practically well the next morning. He had come to the conclusion that the flow of bile stopped on account of the mechanical pressure of the salt solution in the cyst and that when the pressure became equalized, the bile ceased to flow, so that a little later the contents of the pericyst consisted of salt solution with a little bile; nothing further happened and the fluid became absorbed. Another point about the injection of saline solution was that any small hole towards the posterior part of the cyst was displayed on account of the pouring out of the solution from the cyst into the abdominal cavity.

MR. GORDON CRAIG (Sydney) agreed with Mr. Hamilton Russell on the physical basis of the use of saline solution. He mentioned the work of Dévé and Harold Dew; by the injection of hydatid fluid they had been able to produce hydatid in any part of the body they desired. He himself used alcohol as a means of destroying the hydatid. He admitted that there was grave danger of leakage from the cyst and suggested that where suppuration followed marsupialization and drainage, the hydatid was killed possibly by the suppurative process. After withdrawing a portion of the hydatid fluid from a cyst, he injected pure alcohol and then cleaned up the cyst mechanically and inserted a drain. The first part of the discharge was serous, but later hydatid fluid might appear. This he attributed to a secondary smaller cyst bursting into the main cavity. He referred to Sir George Syme's good advice that no hard and fast rule could be laid down in regard to the treatment. He spoke of the importance of the germinal layer of the cyst.

DR. L. E. BARNETT (Dunedin) stated that with regard to the ectocyst its importance had not been sufficiently recognized. If its vitality or tone were damaged or interfered with, daughter cysts formed and osmosis was altered; the result clinically was a change in the response to the Casoni and complement fixation tests. The latter depended on the integrity of the ectocyst. With regard to the X ray diagnosis he considered that the use of such substances as "Lipiodol" was not justified. He stated that in the Argentine and Uruguay government propaganda was active and laws were very strict, but this had failed to stop the disease amongst the illiterate people of the country districts; in the towns the disease was on the decrease. In Australasia they should be careful not to become slack regarding the question. It should be made a penal offence to throw raw offal to dogs. He warned surgeons not to attempt to remove a partly pedunculated cyst on account of the danger of a very serious hæmorrhage occurring from the liver in the region of the attached portion. It was not wise to leave formalin solution in the sac; formalin was of no use when daughter cysts were present. In these cases he removed the daughter cysts and swabbed out the cavity with formalin. The importance of formalin was that the scolices were killed by a 1% solution of formaldehyde in five minutes. The same experimental evidence was not patent with regard to the killing effect of alcohol on the scolices. He considered that surgeons should hesitate about operating for a pulmonary cyst if it were deeply placed; the mortality rate was very high and a great many of the patients cured themselves spontaneously by evacuation. Suppurating cysts were being treated with great frequency without drainage. The infection was of a low grade type and many of the patients were cured. The pendulum was tending to swing back to drainage of suppurative cysts. Cysts with rigid calcareous walls which did not collapse, formed one of the bugbears of surgery. Cauliflower excrescences often grew into the interior of the cyst and microscopically these appeared to be really growths from the ectocyst.

In conclusion Dr. Barnett referred to the exhibit in the preventive medicine museum. He stated that the placards were not up to date as they still conveyed the idea that hydatid disease was largely water-borne, whereas in the majority of cases infection was usually by direct contact with dogs.

SIR GEORGE SYME in reply referred to recurrences in the skin and liver; if in the latter he considered that it was due to the condition which Mr. Gordon Craig referred to, namely a small cyst discharging into the main cyst after operation. In the old days when tapping was common, there was often a fresh serous discharge for the first few days and later a flow of hydatid fluid which was a point in favour of Mr. Craig's explanation. In reply to Dr. Acland as to whether it was safe to formalize the peritoneal cavity, he could not give any information. He stated that he had not known of a case of reinfection after the abdomen had been swabbed. He stated that formalization of a cavity must take place prior to evacuation of the contents, as the risk of reinfestation occurred during operation. Loculated cysts were certainly very difficult to clean out. The best method of procedure was to enlarge the incision and to mop out the cavity under the direct vision of a head light or an electric lamp actually placed inside the cavity. The theory of growth of daughter cysts was that it was in inverse ratio to the density of the tissue. In bone, for instance, there would be a multiplicity of cysts, whereas in soft tissue such as the brain there would be very few. He agreed with Dr. Barnett as to the low infectivity of suppurating cysts and that was the reason why it was possible to deal with them as suggested by Mr. Hamilton Russell. In spite of what Dr. Barnett said about the difficulty of treating calcareous cysts, he had often removed a considerable amount of the wall without any serious hæmorrhage taking place.

MR. GORDON CRAIG emphasized the fact that he injected alcohol prior to evacuating the contents of the cyst.

COMBINED MEETING.—SECTIONS IV. AND V.

Parasitology in the Tropics.

Hookworm Disease.

DR. T. RUSSELL RITCHIE (Samoa) described the problems with which the health service in Western Samoa was concerned. The population of the natives was 38,000. They lived in villages close to the sea. More than half the native population was under eighteen years of age and 31% attended school. In regard to the control of hookworm disease, he mentioned that the work had been started by O'Connor and continued by his department with the aid of the International Health Board. Each night a lantern lecture was given on the village green and on the following day treatment was started. The assistance of native women had been sought in order to gain their interest. Native girls were employed to take charge of dispensaries, after preliminary training. The disposal of excrement presented unusual difficulties. In villages close to the sea drop latrines had been installed. In other situations pit privies had been dug. In situations where this could not be done on account of the shallowness of the soil, temporary arrangements had to be made, pending the adoption of some form of water-borne sewerage system. The native refuses to use a pan privy. The treatment comprises the giving of a mixture of carbon tetrachloride and oil of chenopodium, the latter on account of the prevalence of *Ascaris lumbricoides*.

Paragonimiasis.

DR. R. W. CILENTO (New Guinea) pointed out that until the year 1926 no trematode parasite had been discovered in any native in New Guinea, although some had from time to time been found in Chinese in the Territory. A native who had lived in a remote village which had been visited only three times by white men, was found to harbour *Paragonimus ringeri*. The native had not left his village previously and in consequence the infection must have been a local one. Dr. Cilento referred to the published accounts of paragonimiasis which was described as a dangerous and incurable one. It had not been recorded in a native in any territory south of the Philippine Islands except Sumatra. He suggested that an intermediary host was probably present in New Guinea. The disease gave rise to morning cough, rusty brown sputum and was associated with bronchopneumonia, bronchiectasis, bronchitis and peribronchitis, abdominal pain and diarrhœa. The course was prolonged and unless complicated by tuberculosis, the disease did not threaten life. When the brain was infested, the prognosis was very bad. The intermediary hosts were said to be certain fresh water snails, various crabs and crayfish and the optimum definitive host was the pig.

Framboesia.

DR. T. RUSSELL RITCHIE (Samoa) gave an account of the measures adopted in Samoa to combat yaws. In the past practically every child acquired yaws before it reached the age of two years. The natives believed that yaws was a necessary disease without which development could not be normal. They therefore took steps to favour its onset in children between twelve and eighteen months. In 1923 systematic work had been begun. "Novarsenobillon" injections had been given to every child. The country had been divided into districts of a size and nature that the treating party could give every child three injections in the course of three weeks. The districts were covered in five days before the second injections were given. In this way 32,366 injections had been given in 1924, 21,000 in 1925 and just over 4,000 in 1926. Very few primary lesions were seen in 1926. The treatment of tertiary lesions in adults was being postponed, chiefly because it was desired to prevent reinfection in adults while the infants were being handled. The immunity was also useful in view of the curious fact that although syphilis had been introduced into Samoa on many occasions, there was no syphilis among the natives. It was thought that framboesia conferred some protection against syphilis.

SECTION I.—MEDICINE.

Blood Formation.

PROFESSOR C. WITHERINGTON STUMP (Sydney) as a result of his investigations into the origin and formation of blood corpuscles came to the conclusion that myelogenesis was a growth manifestation of the multipotency of indifferent mesenchyme cells. The process began after the formation of osteoblasts and osteoclasts. What he termed the stem blood cell maturated from the same type of primitive connective tissue energid that gave rise to the cells of bone tissue. Endothelial cells also arose from the mesenchyme syncytium, but did not develope into free cells. The remaining cells of the syncytium assumed the form of a reticulum in the interstices of which the stem blood cells proceeded to form myeloid elements. The marrow cells arose from the reticular cells and became free to act as phagocytes, to form plain muscle cells and to form fat cells. Both the phagocytic cells and the fat cells retained the vesicular form of nucleus that characterized the mesenchyme cell. In hæmatogenesis the stem blood cell developed along three distinct lines. The red cell series was formed by homoplastic processes, the white blood cell series by both heteroplastic and homoplastic processes and the megakaryocyte series by heteroplastic processes. The stage of evolution of the red blood cell was entered when the nucleus underwent changes to permit of fragmentation of the chromatin body. The appearance of specific granules in the cytoplasm of the stem blood cell without changes in the nucleus indicated the development into leucocytes. The specific granules of the granulocytes were endogenous. In the red blood cell series final maturation was associated with pycnotic degeneration of the nucleus and solution. Extensive proliferation of the early types of both blood series occurred, creating a reserve for unlimited demands and forming the bulk of myeloid cells in developing marrow.

DR. S. S. SEWELL (Melbourne) asked Professor Stump how he recognized megaloblasts.

Professor Witherington Stump explained that the erythroblast stage was when both hæmoglobin and the wheel nucleus were apparent; it was a hesitating phase in the red cell series. This type was capable of rapid stimulation into activity.

Pernicious Anæmia.

DR. D. E. FENWICK (Wellington) read a paper on the treatment of pernicious anæmia. The former pessimism had been to a large extent removed by the work of Hurst and others. It was known that the blood destruction of this disease was the work of a hæmolytic toxin which was probably produced in the alimentary canal. This toxæmia did not occur when free hydrochloric acid was secreted in the stomach. The treatment consisted in the administration of hydrochloric acid, the treatment of focal sepsis, the administration of arsenic and the transfusion of blood. In addition, rest, proper dieting and other hygienic measures had to be prescribed. Dr. Fenwick raised the question whether the apparent cures which had lasted for three years, were actual cures or merely prolonged remissions. He thought that it was too early to determine this. He gave large doses of hydrochloric acid. The initial dose was 5·3 mils of the dilute acid of the British Pharmacopœia. He considered that obvious septic foci should be treated, but did not approve of wholesale extraction of teeth. He advocated the giving of arsenic by mouth; small doses should be used at first and the doses should be increased gradually. Blood transfusion in his experience was a remedy to tide a patient over a crisis. There seemed to be no justification for this as a treatment of pernicious anæmia.

DR. D. W. CARMALT JONES (Dunedin) analysed sixteen cases of pernicious anæmia in patients treated at Dunedin Hospital. Five had been treated with arsenic and other approved remedies, but without transfusion and eleven with transfusion in addition. The treatment consisted in rest, diet, the removal of obvious septic foci, hydrochloric acid, streptococcal vaccines and blood transfusions. The method of transfusion which had gradually been adopted, was the use of repeated injections of about a quarter of a litre of blood at intervals varying between two and four weeks, continued for six months if necessary.

Dr. Carmalt Jones regarded this as a most important adjunct to treatment and detailed the clinical histories of three patients who had been so treated with success. He contrasted the course of illness with that of aplastic anæmia and carcinoma of the stomach in which a very similar blood picture was noted, but in which there was no response to the transfusions; the cases had ended fatally.

In his opinion a patient with the typical blood picture of pernicious anæmia which did not respond to this treatment, was likely to turn out to be suffering from some other disease, such as carcinoma of the stomach.

DR. C. R. BURNS (Dunedin) gave an account of the reactions which followed blood transfusion in patients at Dunedin Hospital. In all he had studied the records of one hundred; in fourteen there had been some reaction after transfusion. Of these, seven had suffered from severe and the other seven from mild reactions. Of the seven with severe reactions, two had had sudden symptoms of headache and backache during the transfusion; one of them had died during the transfusion, the other had had hæmoglobinuria on the following day. In the other five the symptoms supervened after removal to the ward. There was some evidence in favour of the reactions in these instances being due to hæmolysis, though he was aware

that the opinion of workers in this subject was against that view. The milder reactions took the form of a rise of temperature for one, two or more days. The underlying causes that suggested themselves were impure citrate or mild degrees of hæmolysis. Curiously enough the severe reaction had occurred on each occasion when a donor of the specific type had been selected. Lately they had been using type IV. donors for all and there had been no reaction.

DR. F. BEVAN BROWN (Christchurch) spoke of sudden death that had occurred during the transfusion as a result of sudden overloading of a fatty heart with an increased volume of circulating fluid. The heart had stopped in diastole. Hence small transfusions were recognized to be safer. On the assumption that pernicious anæmia was due to an infection by a streptococcus which lived best in a protein medium, it might be advisable to restrict the nitrogen intake, but here a difficulty arose in that nitrogen was required for restoration of the blood elements. Achlorhydria had not been proven as a necessary precedent of the disease. Since 4% of all persons had a natural achlorhydria, it was a reasonable assumption that the achlorhydria was also secondary to the thing which caused the hæmolysis, this same agent acting on the secreting cells of the stomach.

DR. S. V. SEWELL (Melbourne) asked Dr. Carmalt Jones whether there were megaloblasts or megalocytes in his case of gastric carcinoma. He referred to the clinical history of a patient with extreme pernicious anæmia with an undoubted blood picture, hæmoglobin 25%, red blood count 1,000,000. He had been giving hydrochloric acid and arsenic by mouth with no success. Intravenous injection of "Salvarsan" in alkaline preparation was given with miraculous result. The patient was still alive after fifteen years and was having blood transfusions at frequent intervals. Another patient under his care had lived for six years and was having frequent blood transfusions. These patients had lived longer than any others under his care. He described a case of rapidly progressive anæmia of only three weeks' standing; there were 1,000,000 red blood corpuscles per cubic millimetre. The blood contained megaloblasts with cartwheel network. A blood culture yielded a growth of hæmolytic streptococcus. The patient had been a normal, healthy girl with slightly sore throat. He had given two hundred cubic centimetres of antistreptococcal serum and repeated small transfusions of blood. She had convalesced after two and a half months and had become perfectly well. This was a case apparently of streptococcal septicæmia, but the blood picture would have suggested acute pernicious anæmia.

DR. T. W. J. JOHNSON (Auckland) contended that pernicious anæmia as usually seen was a well advanced condition. He was watching fourteen patients with anæmia which he believed to be early. The signs and symptoms were pallor, languor on exertion, sore tongue and diarrhœa. A test meal revealed an achylia which completed, he believed, the syndrome of early pernicious anæmia. He had instituted a course of hydrochloric acid. In one patient the blood picture had given a slight indication, but only in one. He testified to the value of treatment with acid. One man treated by hydrochloric acid alone had remained well. In his experience transfusion was of considerable benefit to young adults, but of less frequent benefit to those of sixty or so.

Dr. Fenwick could not accept the streptococcus as the basic cause of pernicious anæmia; the position was non-proven, hence he did not see sufficient reason for reduction of protein diet. The weight of evidence both in England and America was in favour of achlorhydria being the precursor of pernicious anæmia. He agreed with Dr. Johnson regarding the symptoms of the early phases of pernicious anæmia. He suggested that there seemed almost to be a familial tendency to the disease. He had examined the other apparently healthy members of families in which there was one member suffering from pernicious anæmia, and had found an achlorhydria. Though this proved nothing, it was suggestive.

Dr. Carmalt Jones stated that there had been numbers of megalocytes in the blood of his patients with gastric carcinoma. There had been no examples of sudden death as far as he knew among the patients whose histories he had been detailing. He had had no experience of treatment by low protein diet in pernicious anæmia. Though he was inclined to follow Hurst in thinking that the long-chained streptococcus was the root cause, he suggested that the infection was grafted on the achlorhydria. He had laid down no specific prescriptions regarding diet.

SECTION III.—OBSTETRICS AND GYNÆCOLOGY.

The Treatment of Prolapse.

DR. A. NORMAN MCARTHUR (Melbourne) had come to the conclusion that the habitual premature use of forceps in childbirth had resulted in a greater amount of relaxation of and damage to the uterine supports. He had noted in recent times the great frequency of wide sagging of the upper reaches of the vagina, while the vaginal orifice was comparatively small. He had given up extensive abdominal operations. He had revised his methods and had restricted them to vaginal plastic work. After describing his operation of anterior colporrhaphy with or without amputation of the cervix and his operation of colpo-perineorrhaphy, he pointed out that he had satisfied himself by examining the patients at a later date, that the results obtained were perfect. The plastic work demanded skill and knowledge and he warned practitioners not to attempt to perform perineorrhaphy unless they were competent to carry out this kind of work. The patients should be sent to the specialist.

SECTION VII.—OTOLOGY, RHINOLOGY AND LARYNGOLOGY.

Operative Treatment of the Mastoid Diseases.

DR. T. A. MACGIBBON (Christchurch) read a paper on the operative treatment of diseases of the mastoid. He divided these procedures into operations for acute suppurative mastoiditis complicating acute suppurative *otitis media*, operations for acute exacerbations of chronic mastoiditis and operations for chronic mastoiditis and *otitis media*. After discussing some of the signs of involvement of the mastoid cells, Dr. MacGibbon gave a description of Schwartz's operation with some modifications. He preferred Lake's gouges and approached the mastoid cells from the apex of the process. After having opened the cells, he continued to follow the route of infection, if necessary through the zygoma to the subtemporal region. He did not hesitate to pass a probe into the *aditus*. He disapproved of flushing the cavity after the completion of the operation. He applied bismuth-iodoform-paraffin paste. A radical operation was needed whenever cholesteatoma was present, when there were persistent or repeated attacks of vertigo or paresis of the seventh nerve. He described his method of performing the radical mastoid operation. The operation of ossiculectomy was rarely done. The patient after a radical operation could be insured without extra premium. After ossiculectomy the patient would not be accepted as a "first class life." In conclusion Dr. MacGibbon insisted that the otologist should see the patient after the radical operation at intervals for the remainder of his life. Desquamated skin at times collected and eroded bone also gave rise to foul odours.

DR. E. GUTTERIDGE (Melbourne) in reference to primary closure said that they had become tired of prolonged dressings at the Children's Hospital in Melbourne and had tried a series of thirteen patients in which the mastoid wound was closed primarily; they were all successful. They had then had a few in which this treatment had been a failure. The procedure was primarily closure except when there was an abscess. If the temperature remained high and there were any signs of suppuration, the wound was opened and plugged. He spoke of the importance of nasal infection and said that if necessary tonsils and adenoids should be removed early. For chronic suppuration they gave a long course of treatment with drops and douches and finally zinc ionization, the Bondy method. Radical mastoid operations were very uncommon at the Melbourne Children's Hospital, only after other

methods of treatment had failed were patients operated upon and in all skin grafting was done.

Dr. J. Hardie Neil (Auckland) was in favour of early opening in definite mastoiditis. The bad results that were reported to have ensued were due to be original virulence of the infection. He considered that hæmorrhagic mastoiditis was of very serious import. It generally meant a virulent infection at times with acute bacteriæmia and often a terminal lung infection and death. He found radiography very useful. In acute mastoiditis with disintegration, a good procedure was to put in an adrenalin pack and to wait for five minutes to get clear demarcation. As to early closing of the wound each case must be judged separately. It was sometimes advisable, but not when severe constitutional symptoms were present. He had found Heath's operation useful in some cases; one great advantage was the conservation of hearing when the other ear was affected. He did a radical mastoid operation when signs of meningeal irritation rendered the operation imperative. In skin grafting he used Thiersch grafts and a collodion preparation. He considered sclerosis of the mastoid pathological. The cellular and diplastic types were degrees in pneumatization.

Dr. W. N. Robertson (Brisbane) said that he did not consider early closure of the wound a good surgical procedure, but he had done it successfully in a few cases where time was of the greatest importance. For Heath's operation he always used a large rubber tube to prevent contraction of the meatus. In one patient with cholesteatoma, a girl who had been brought into the hospital unconscious and who had suffered from facial paralysis for two years, after opening up the mastoid and washing out the cholesteatomatous material he had found the facial nerve exposed in the bottom of the cavity. In six months time the girl had recovered power in the nerve. He approved of Fraser's skin graft, a huge graft packed in with knitting wool soaked in bismuth-iodiform-paraffin paste. The patient generally left hospital in a week after operation. Tubal infection was the bugbear of all radical mastoid operations. He had tried to peel off the mucous membrane of the tube and to push it down so as to make a kind of cork. Nasal infection should be sought. Since medical inspection of school children had been introduced, there were fewer cases of mastoiditis because tonsils and adenoids were removed early.

Dr. H. J. Gray (Perth) asked how strict aseptic precautions in opening the drum were obtained. He had found radioscopy helpful in many cases. He liked a more posterior incision than that recommended by Dr. MacGibbon and found a large wooden mallet much less tiring.

Dr. E. L. Marchant (Wellington) favoured turning in whole tissue flaps instead of skin grafts. There was a much smaller cavity and subsequently less treatment.

Dr. R. Pulleine (Adelaide) mentioned a patient with cholesteatoma and facial nerve paralysis in whom after removal of the cholesteatoma rapid recovery of the facial nerve ensued. True cholesteatoma was a rare disease. What was called cholesteatoma was simply hyperkeratosis growing through the tympanic membrane causing pressure necrosis and a foul odour. The patients with hyperkeratosis were the people who got ivory mastoids. In regard to the incision the hæmorrhage was much less troublesome if cocaine and adrenalin were injected into the site five minutes beforehand. Beck's clamps were often used to control bleeding. Macewan used a trephine and then burrs and sharp spoons and considered the use of a chisel criminal. A large wooden mallet and wooden handled gouges prevented jarring. His procedure in acute mastoiditis was to open up the antrum and to make sure there was no infected cell in the tip and then to sew up. He used a piece of fine rubber tubing doubled over for drainage. He disapproved of any operation for tuberculous mastoiditis; it rarely did any good. He used iodoform and iodine in this condition.

Ossiculectomy for non-necrosed ossicles should be relegated to the limbo of the past. Radiography of the mastoid gave a good idea of pneumatization and whether pus was present. He found transillumination in a perfectly dark room with the aid of the small lamp of an electrical ophthalmoscope in the meatus and a comparison of the two sides of value in children.

Dr. T. A. MacGibbon in reply said that he did not consider primary closure a justifiable operation. The surgeon could not be sure that the blood clot was free from infection from the middle ear. Unless complications were present he thought that radical mastoid operations in children were not justifiable. He removed the apex of the mastoid, but not the actual tip, so that a Y-shaped attachment of the sternomastoid remained. For cleansing the meatus he used ether, warning patients that it would sting. After paracentesis he used "Lysol" solution and then dried thoroughly with swabs of cotton wool. As to cholesteatoma, continental surgeons examined the aural discharge for cholesterin crystals and when these were present, they performed a radical mastoid operation.

Middle Ear Disease.

Dr. R. Pulleine (Adelaide) read a paper on conservative treatment for middle ear disease. In the first place he insisted on early paracentesis as soon as there was pain, redness of the tympanic membrane and convexity. When mastoid involvement was just beginning nitrate of mercury ointment might be used. Hyperkeratosis of the middle ear and of the attic led to persistent discharge. Small polypi were often associated with this as were granulations on the promontory, ossicles or posterior meatal wall. The treatment consisted in pertubal lavage, high pressure syringing, zinc ionization, iodine vapour insufflation, ear baths of alcohol, "Zonite" solution, "Mercurochrome" and aluminium acetate, closure of the Eustachian tube and closure of the tympanic perforation. The treatment of hyperkeratosis was successful if the epithelial flakes were not allowed to collect and to macerate. It had to be maintained for a year or two. It was important to protect the ear from infection during bathing by the insertion of greasy cotton wool.

Dr. T. A. MacGibbon (Christchurch) said that he used 10% nitrate mercury ointment a great deal, especially in furunculosis. This was much weaker than the ointment used by Dr. Pulleine. He had found ether useful in hyperkeratosis. He had used zinc ionization and had found that if the discharge were sero-purulent or purulent it was valuable, but when the discharge was mucoid or muco-purulent he did not get good results. Bad escharotic effects might be caused by iodine vapour in the middle ear. He found a 2% solution of silver nitrate a very good agent.

In a paper by Dr. H. Hays (New York) read by Dr. Hardie Neil, the writer stated that the interpretation of symptoms of acute *otitis media* was most important. If they could go by classical symptoms, there would be little trouble, but unfortunately symptoms varied considerably and even the most acute specialist found himself in trouble. Grave consideration had to be given to two facts, the symptoms of which the patient complained, and the proper examination of the *membrana tympani* and mastoid process. The important symptoms were pain and fever. In almost all cases the patient had been suffering from some intercurrent disease, such as influenza, scarlet fever, so that his general resistance was below par. The pain in almost all patients was quite severe, except in young children.

The fever was a guide to the severity of the infection in many cases. As a rule the fever did not last many days after the drum was properly incised, but if it persisted, the surgeon had to watch the patient very carefully. Of primary importance was the establishment of as free drainage as possible, which meant a wide and extensive opening of the *membrana tympani* sometimes even when spontaneous rupture had occurred. The spontaneous opening in the drum was seldom in the best place for drainage. If the drum had to be incised an anæsthetic should be employed, no matter how young the patient. Occasionally with adults a local anæsthetic sufficed; he used equal parts of cocaine, carbolic acid and menthol.

If possible, a transient general anæsthetic, such as gas and ethyl chloride, should be used. The incision in the drum should be a sweeping one extending from the upper

posterior part, forward and downward and then upward towards Shrapnell's membrane. In severe cases it was necessary to take X ray pictures every few days. The patient was instructed to keep the middle ear and canal clean by frequent douches. If the discharge was very thick, the patient could accomplish a great deal by wiping the ear clean with pledgets of cotton wool on a tooth pick or by having suction used on the canal and middle ear.

Several specific treatments were of value. They included cleansing and abortive treatment, zinc ionization, "Acri Violet" solutions, "Mercurochrome," local vaccine therapy, ultraviolet rays, restoration of hearing.

In a certain number of patients the discharge persisted and the general physical condition remained below par. In these cases a mastoid operation was the conservative procedure.

DR. T. A. MACGIBBON (Christchurch) discussed the expense of frequent X ray examinations and thought the skiagrams taken in Christchurch were not good enough to be of much use. He agreed that abortive drops were often useful. Mixed vaccine treatment was unscientific and the combination of dyes was not good .

DR. H. J. GREY (Perth) said that he found "Flavine" very good and would continue to use it.

DR. J. HARDIE NEIL (Auckland) considered that Dr. Hays's paper was a complete exposition by a master of otology. It appeared that in America they had more patients with acute *otitis media* than in New Zealand. The infection was probably more virulent. He discussed the cause of pain in the throat and in the back of the neck during zinc ionization. He concluded that it was due to electrical reaction. In acute *tympano-otitis media* a meatal adrenalin pack for five minutes frequently permitted a better definition of the landmarks and was very useful to those working in hospital clinics.

SECTION VIII.—NEUROLOGY AND PSYCHIATRY.

The Voluntary Patient.

DR. RALPH NOBLE (Sydney) in a paper on the voluntary mental patient attacked the problem by dividing patients with mental disturbances into three classes. There were those who were anxious to receive treatment; there were others who were indifferent; lastly there were those who had no insight into their illness. He was of opinion that the psychiatric clinic and voluntary hospital provided for all three classes. The first came of their own account. The second could be persuaded to attend, provided that the institution were congenial. The friends and relatives of the third group of patient would send them to a well managed hospital. There would still be need of compulsory detention of some insane persons. Dr. Noble stated that psycho-neuroses were usually the result of inability on the part of a person to adapt himself to his environment. Advice given at the psychiatric clinic helped him to overcome his difficulties. The majority of the patients needed only moral advice. Some had to be removed from their home environment. A short stay in the beds attached to the clinic often sufficed. The psychiatric clinic was much better adapted for the teaching of psychiatry to students than the mental hospital. In the latter the student saw patients in the advanced stage of disease. In the former he saw them in early stages, a stage with which he should be familiar when he entered practice. Occupational treatment was a valuable adjunct to psychiatric treatment and this could be provided at the clinic. Dr. Noble discussed the treatment of neurasthenia, of hysteria, of the sequelæ of *encephalitis lethargica* and of syphilitic nervous diseases based on the principle of the avoidance of institutionalization.

DR. W. ERNEST JONES (Melbourne) drew a comparison between the provision for the admission of voluntary boarders in Great Britain and in Australasia. The British Royal Commission on Lunacy and Mental Disorders reported in 1926 in favour of the admission of voluntary boarders provided that the application was made voluntarily and with full understanding of its significance. In England and Scotland uncertified patients were received in private institutions only, whereas in Victoria and other Australian States the receiving house and voluntary boarder system was part of the department's activities. He displayed a table setting forth the number of those certified, of those received in institutions as voluntary boarders and of those so received who had been discharged in England and Wales, in Scotland, in Victoria, in New Zealand and in New South Wales. The voluntary system had been introduced into New Zealand in 1912 and had become popular since then. In Victoria it had been introduced in 1914. The process was a simple one and was in consequence open to abuse. Dr. Jones referred to the measures that were taken to prevent abuse. He referred to Broughton Hall in New South Wales, as the most advanced institution of its kind in Australasia. Ultimately the treatment of mental disease in its early stages would be undertaken in general hospitals.

DR. ST. L. GRIBBEN (Auckland) considered the system of the voluntary boarder from the point of view of the patient, from the point of view of the friends and public and from the point of view of the medical profession. The patient had begun to realize that he could obtain treatment of conditions which were not severe enough to render him certifiable as insane. Compulsion was avoided and the publicity attendant on certification was removed. The system overcame the prejudice concerning mental hospitals in the minds of the public. The voluntary system had given a fresh impetus to the setting up of small, self-contained units. This favoured classification and individual treatment. The voluntary patient frequently asked if he could return without formality, should he feel the need for further institutional treatment. The system had been well received by the public. The medical profession had benefited greatly by the innovation. Medical practitioners took advantage of it by sending patients to the institutions when the conditions essential for successful treatment were not available in the home.

WEDNESDAY MORNING, FEBRUARY 9, 1927.

COMBINED MEETING.—SECTIONS I, II, VIII AND XI.

Spastic Paralysis.

DR. S. V. SEWELL (Melbourne) first of all gave a brief review of the proprioceptive nervous system, outlining the three main pathways of afferent impulses originating in muscles, the first level arc, the second level tonus and posture maintaining arc and the third phasic arc. He also mentioned the cerebellar-cerebral connexions, emphasizing the fronto-pontine fibres. Experimental investigations had shown that the spasticity due to lesions in the internal capsule was due to the simultaneous involvement of these fronto-pontine fibres, not to the involvement of the pyramidal tract. Conditions like *paralysis agitans*, post-encephalitic rigidity and Wilson's disease were probably instances of disease destroying the inhibitory mechanism of the striate level.

It was possible that tonus-maintaining impulses, associated with the maintenance of posture, initiated from the emotional or striate level, found their final common pathway by way of the sympathetic outflow to the muscles; this would account for the slight improvement reported after sympathectomy in cases of postencephalitic rigidity.

DR. N. D. ROYLE (Sydney) gave a cinema demonstration on ramisection.

DR. H. R. G. POATE (Sydney) confined his remarks to his personal experience of Royle's operation of sympathetic ramisection. He had had twenty patients under his own immediate care on whom the operation had been done and he had seen many of Dr. Royle's patients both before and after operation. After dealing with the indications for the operation, he reviewed the operative results from the point of view both of the observer and of the patient. He gave figures showing that in the main they agreed. In no case was there a failure to obtain a physiological result. This was noticed by the patient immediately he recovered consciousness. The most noticeable postoperative feature in patients whose lower limbs were affected, was the restoration of balance. There

was often amelioration of obstinate constipation and relief from chilblains. In his experience the best results had been obtained in cases of spasticity following cortical injury and occasionally in postencephalitic rigidity.

DR. T. W. LIPSCOMB (Sydney) said that he had seen the evolution of Dr. Royle's work on the sympathetic and he was quite certain that the practical results of ramisection in suitable cases were decidedly good. In every case definite physiological results were obtained. He referred to the lecture by Professor John Fraser, of Edinburgh, at St. Bartholomew's Hospital in November, 1925, correlating the effect of the sympathetic in the alimentary canal.

DR. E. D. PULLEN (Christchurch) briefly recounted their experience in Christchurch with the operation of ramisection. In suitable cases they had had good results. It was essential to operate only in suitable cases.

DR. O. LATHAM (Sydney) dealt in his paper with the histological evidence of the presence of sympathetic nerve endings in striated muscle fibres. After he had passed the main contributions to this subject in review, he detailed some work Dr. J. K. Wilkinson and he had carried out and more recent work of Dr. Wilkinson. In the earlier work they had used the wing muscle of the hen and also the tissue of the blue-tongued lizard. He suggested that the nerve endings could be divided into four classes. The first was the *plaque* ending from myelinated fibres. The second was a more delicate ending which had subsequently been shown to come off a myelinated fibre. The third was a typical *terminaison en grappe* derived from pale fibrils from mixed nerves. The fourth was recognized as the frond-like ending of a single fibril attached to the sarcolemna. The later work of Dr. Wilkinson revealed that every striated muscle fibre was innervated by a somatic nerve. In addition every striated muscle fibre probably received a sympathetic nerve fibre ending in or near the sole plate in which the somatic nerve ended. He had come to the conclusion that the ordinary *terminoisons en grappe* were developmentally altered somatic nerve endings. The grape-like terminations in the extrinsic muscles of the eye were sensory nerve endings. Dr. Wilkinson also found that Boeke's sympathetic nerve endings were derived from fibres surrounding the blood or lymphatic vessels.

COMBINED MEETING.—ALL SECTIONS.

Cancer.

PROFESSOR P. MACCALLUM (Melbourne) mentioned the great public interest in the cancer problem, indicative of the magnitude of the effort being made to solve it. Statistical records showed a steadily increasing cancer death rate in many countries, but this could be explained by better diagnosis and the survival of more people to the cancer age. Though there had been a steady increase in the cancer group, some individual cancer types had actually shown a definite decline.

He referred to Miss Slye's work on heredity in relation to cancer and to Dr. Gye's work on filter-passing virus and chemical specific factor. Tissue culture investigations were yielding results of great importance, notably Warburg's research into the metabolic processes of cells and Heaton's research into the factors affecting the multiplication of fibroblasts and epithelioma.

Efforts directed especially to treatment had received much attention. He mentioned Blair Bell's lead treatment, Lumsden's immunological work and radiological investigations.

The search for a general clinical test that would be of value in the diagnosis of cancer had so far gone comparatively unrewarded. Botelho's serum reaction had been shown to be the most promising among those elaborated. None had established any dependable value as a clinical aid.

There was much need for the dissemination of knowledge of early symptoms, so that patients would come under medical advice early.

It was scarcely possible to draw any useful conclusion from the heterogeneous mass of facts available.

PROFESSOR C. E. HERCUS (Dunedin) read a paper by DR. N. E. H FULTON (Dunedin) who had been engaged in an investigation into the incidence of cancer and the effects of radium therapy.

DR. WI-REPA (Gisborne) referred to the Registrar-General's statistics which indicated that cancer was rare among the Maoris. In his experience cancer was common. Certification of death among the Maoris was not always made by medical men. In the old days the Maoris were such a warlike people that probably very few of the men reached the cancer age.

DR. L. E. BARNETT (Dunedin) was struck by the prevalence of cancer in the alimentary canal. Deaths from stomach cancer exceeded deaths from cancer anywhere else in the body. Of recent years there had been an improvement in the mortality from buccal, breast and uterine cancer. There might be some relationship between diet and the temperature of food and stomach cancer.

DR. A. NORMAN MCARTHUR (Melbourne) referred especially to uterine cancer. He wished to appeal for early diagnosis. Every extraneous discharge should be immediately investigated and cancer proved or disproved. Early cancer of the uterus could be cured by surgery and radiology.

DR. P. D. CAMERON (Wellington) advocated that every case of cancer should be seen by a group of medical practitioners, surgeon, physician, gynæcologist and radiologist. Such a practice would materially help the radiologist. In his opinion deep therapy was successful in a considerable number of patients.

DR. T. MACGIBBON (Dunedin) said that it was too early to say that food was a cause of gastric cancer. The standard of food in New Zealand was very high. In England the increased incidence of cancer in the abdomen was accompanied by a decrease in deaths from vague abdominal causes, due to improved diagnosis.

SECTION III.—OBSTETRICS AND GYNÆCOLOGY.

Pelvic Lymphangitis.

A paper on pelvic lymphangitis by DR. HERBERT H. SCHLINK (Sydney) was read by DR. NORMAN MCARTHUR. Dr. Schlink pointed out that the importance of the lymphatics enclosing the uterus and its adnexa had not been recognized to the same extent as in septic infections of almost every other region of the body. This was largely due to the emphasis which was formerly placed on the fact that the female had a genital tract running from the surface of the body and opening directly into the peritoneal cavity. Dr. Schlink gave a brief description of the lymphatics of the internal genital organs of the female. He pointed out that the glands, arranged in four large groups, were situated on the outer wall of the pelvis and placed no obstacle to the flow of lymph through the system of vessels surrounding the uterus and its adnexa. He paid particular attention to the minute anatomy of the lymphatics of the uterus. The lymph current could be traced from its origin in the cervical and corporeal mucosa directly to the muscular layer. The capillary network enclosed every muscle bundle and communicated freely with the channel surrounding the internal genital organs before passing to its glandular destination. Dr. Schlink then went on to discuss non-puerperal infections of a chronic nature. The commonest ascending organism was the gonococcus. The area from which it was most difficult to eliminate gonococci, was the cervix with its network of deeply penetrating racemose glands. In acute fulminating gonorrhœa the organism became a surface traveller and when relaxation of the internal *os* occurred, passed through the body of the uterus, causing a temporary endometritis on the way to the Fallopian tube. Dr. Schlink showed a series of photomicrographs which supported the view of Wertheim that gonococci penetrated the cervical tissue and he also showed preparations which he claimed demonstrated the method of subperitoneal lymphatic inva-

sion. The gonococci spread from the musculature of the cervix to their immediate afferent vessels or they might pass along the subperitoneal network of lymphatics or might force their way into myomesial lymphatic spaces. If the infection progressed, they would extend and travel along the lymphatics accompanying the uterine arterial arch and so find their way to the perisalpingeal network causing perisalpingitis. Dr. Schlink then outlined a course of treatment which consisted of attention to the patient's general health, douching and *Sitz* baths with local applications to the cervix and treatment by vaccines. When an endocervicitis resisted such treatment for from nine to twelve months, the endocervix should be enucleated.

DR. J. W. DUNBAR HOOPER (Melbourne) said that they were fortunate to hear such an excellent paper. There were too many women crippled by the after results of labour. They complained of pelvic discomfort and inability to perform their household duties. They were suffering from pelvic adhesions and mild inflammation resulting from cervical and vaginal injuries during birth and spreading along the lymphatics. Some time ago he had suggested to a London pathologist his theory of lymphatic spread. The pathologist had laughed at him, but later had agreed with his theory after carefully investigating this channel of infection. Any vaginal or cervical trauma would lead to a certain morbidity; later when pelvic lymphangitis had occurred, they forgot the original trauma. They did not finish with their maternity work on the tenth day of the puerperium. Pelvic lymphangitis might be brewing when they thought that all was well.

DR. C. NORTH (Dunedin) said that he wished there were time to discuss all the aspects of this subject. He would like to hear the opinion of other men on certain points. The first was cervical enucleation, the cutting out of the cervix to the level of the external *os*. The second was the question of the electric cautery and of fibrous contraction after its application. He also mentioned the reaction of aniline dyes in cervicitis. Methylene blue in glycerine he considered was valuable in the early stages. In the last place he asked for opinions in regard to the question of what should be done with the hypertrophied, irregular cervix when a hysterectomy was being performed. Should the surgeon cut out of the cervix from above.

DR. A. N. MCARTHUR (Melbourne) said that there was a limit to the spread of infection from a damaged cervix; very frequently the infection did not go beyond the level of the internal *os*. It was difficult to understand, but nevertheless a clinical fact. The result was a chronic inflammation of the cervix, which gave women a large amount of psychological discomfort and pelvic pain. These patients obtained very little relief from local medical treatment. Lately in Sydney Dr. Schlink had enucleated the whole cervical canal with a special instrument. The removal of the cervix got rid of the inflammation, removal to the level of the internal *os*. Bleeding was considerable, but it could be controlled with care. He himself had been using diathermy with good results, but he had been compelled at times to perform enucleation afterwards in some patients.

PROFESSOR J. C. WINDEYER (Sydney) said he had seen Dr. Schlink using his enucleator and he used it quite easily; others had experienced difficulty. It was Dr. Schlink's own invention. They had not got within measurable distance of a decision in regard to the best method of treating the various forms of cervicitis. Hoffmeyer, of the Johns Hopkins Hospital, had been doing work on the pelvic lymphatics and the question of resistance of the pelvic cellular tissues. He was certain that Hoffmeyer's and Schlink's work would be invaluable.

DR. MARY DE GARIS (Geelong) advocated medical treatment of cervical infection. She had obtained good results. Surgery should be a last resort.

DR. F. R. RILEY (Dunedin) was very grateful to Dr. McArthur for so ably demonstrating the slides. Dr. Schlink's paper was a great lesson to them to avoid damage and so to prevent infection. He said that the sexual act late in pregnancy could cause infection. He had had no experience of cutting out the cervix, but he feared cicatricial results might ensue. He said that local treatment was tedious and often unsatisfactory and advocated amputation of the cervix.

Replying for Dr. Schlink Dr. McArthur said that Dr. Schlink's instrument was on view in the Pathological Museum with slides. He advocated medical treatment firstly with later surgical cutting out, if a cure had not resulted. The vessels must be tied securely after the cervix had been removed.

SECTION IV.—PATHOLOGY AND BACTERIOLOGY.

Differential Action of X Rays.

DR. W. M. MOPPETT (Sydney) said that the future of radiation was decidedly hopeful although the results were notoriously uncertain. The main object of his paper was to describe a series of experiments devised to find out whether any particular wave length in the X ray spectrum might have special biological effects not shown by adjacent wave lengths. In his experiments he used an instrument known as the X ray spectrometer.

The biological material he used was chorio-allantoic membrane or breathing organ of the chick embryo at eight to nine days' incubation. This consists of two layers of epithelium enclosing a vascular mesenchyme. A small beam of X rays a few millimetres in cross section was allowed to fall on the allantois at a marked situation. Scattering was diminished by removing a corresponding piece of shell, leaving only the fibrous shell membrane. The effect of a number of different wave length X rays was observed. The immediate X ray effect, some chemical or physical change, was invisible, so the specimen was incubated for a further four days to enable the tissue changes to develope.

A series of varying doses ranging from seventy-two to six minutes were given in different parts of the allantois. Naked eye and microscopical examinations were made. Atrophy was observed at three regions. A punched out area was seen with loss of all visible structure, the blood vessels and other tissue ending in a raised edge. The area would not take stains. This total destruction by a known wave length had hitherto been unknown. Another remarkable fact was the very small dosage used.

Larger waves produced an hypertrophic or inflammatory reaction. Then again there was an area of epithelial invasion producing the picture of a carcinoma. Other changes were those of leucocytosis, myxomatous changes and the formation of fibrous tissue.

He assumed from the experiments that certain wave lengths have the potential properties of affecting living tissues, these properties being antagonized by the presence of other wave lengths. It appeared also that the wave length and homogeneity of a primary beam of X rays were the all important factors in any effect it was desired to produce. Whatever the future might be, many interesting problems had been revealed in the unexpected results obtained by exposing living tissues to X rays of one known wave length.

Tuberculous Lesions.

PROFESSOR J. BURTON CLELAND (Adelaide) read a paper describing tuberculous lesions seen in eight hundred autopsies and deductions made from them. In 527 (66%) no tuberculous foci had been detected. It was concluded that these individuals had never become tuberculous and it would seem that the number of persons invaded by obvious tuberculosis was much lower in Australia than in Britain or on the continent of Europe. In 43 instances slight lesions were present which were regarded as being possibly tuberculous. In these the lesion was indefinite (a little fibrosis or a gritty particle). It was probable that in about half of these subjects the lesion had a tuberculous origin. In 230 instances tuberculous lesions were present and in 103 of these the lesion was healed or calcified. It was probable that this represented fairly closely the incidence in the population at large. Small, quiescent or healing lesions were found in eleven instances, extensive pulmonary tuberculosis was found in 51 instances, exten-

sive tuberculosis elsewhere than in the lungs in seven, tuberculous meningitis in six, miliary tuberculosis in four and pulmonary lesions, slight or semiquiescent (death being due to other causes) in 48. Professor Cleland pointed out that inoculation in the intestines by ingestion had occurred in twenty of the fifty-one cases in which extensive tuberculous lesions in the lungs were found. This was contrary to what would be expected from Koch's results on injecting tuberculous guinea pigs with tubercle bacilli.

SECTION V.—PREVENTIVE MEDICINE.

Forecasting Outbreaks of Diphtheria.

SURGEON-COMMANDER S. F. DUDLEY (Royal Navy) read a paper on the possibility of forecasting outbreaks of diphtheria. He said that it was obvious that the magnitude of an epidemic of diphtheria must depend to a great extent on the number of susceptible individuals in the population concerned. The ease with which bacterial parasites could get from one susceptible host to another must depend largely on the density of susceptibles in the environment. The number of susceptibles in any environment could be obtained by finding out the number of Schick "positive" reactors in a fair sample of the population under examination. For convenience the ratio of susceptibles to immunes might be called the "herd-immunity index." Once the number of immunes formed more than half of the population, a small increase in the immune percentage meant a large increase in the herd-immunity index. Should all the other factors in the spread of infection be equal, then the resistance to epidemic disease became proportional to the herd-immunity index. Surgeon-Commander Dudley illustrated his remarks by referring to the study of diphtheria made by him at the Royal Naval School, Greenwich, and said that it should be possible by estimating the number of Schick "positive" reactors to get an idea of a population's degree of resistance to the spread of diphtheria and to find out by observations what value the herd-immunity index must exceed in order to render a community safe from a serious epidemic, even though susceptible Schick "positive" reactors were freely mixing with carriers of virulent diphtheria bacilli. This degree of herd-immunity could probably be ascertained for certain population groups. When this was ascertained Schick testing would show when an epidemic was to be feared, when an epidemic of diphtheria in actual progress might be expected to cease and how many individuals in the community must be rendered immune in order to raise the resistance of the herd to a safe value. Surgeon-Commander Dudley showed that he had been able to foretell an epidemic at Greenwich and said that in the not so distant future public health authorities would be able to calculate the probabilities of danger from certain infections and to organize appropriate measures of prevention.

DR. T. MCKIBBIN (Wellington) held that it was of great value to get an odd immune person among a community. To carry out the Schick test uniformly through a community was a difficult matter, but was a possibility in schools and institutions. It was possible to predict diphtheria epidemics by seasonal incidence alone. Epidemiological waves were evident in diphtheria and for the last several years diphtheria had been on the wane. The last high death figure for diphtheria in New Zealand had been in 1917; since then the death rate had receded. Probably this was only a phase and sooner or later there would again be a flare up. Predictions might be made along the lines indicated by Dr. Dudley, but might also be made from the weekly incidence of diphtheria for years plotted on paper. When the incidence and death rate rose sharply and continued for two or three weeks, an epidemic might be foretold. Enteric fever and scarlet fever were also decreasing, but this, too, was probably a phase only. Other diseases, for example, meningitis, were on the increase. It seemed as if a change must come in the infectious disease outlook. Influenza was a definite problem. Minor epidemics arose, for example in 1920, a year of influenza, whooping cough and measles, in 1926 whooping cough, mumps, measles, influenza, increased broncho-pneumonia, bronchitis. The checking of influenza was difficult. Notification had had to be curtailed to the virulent type only, such as the pneumonic and the septicæmic types. Acute primary pneumonia as a notifying name was useless. Epidemic influenza was more of the broncho-pneumonic type. It would be of benefit if the registrar of the district were to notify the Health Department of every case of pneumonia, bronchitis and influenza which occurred. At present there was no real dividing line between these three as notified by the practitioner.

DR. H. O. LETHBRIDGE (Narrandera) spoke as a practitioner advocating the value of the direct smear in diagnosis. The disadvantages were the loss of time and unreliability, but in practice a direct smear made from every sort throat led to a classification into three classes: (i.) those in which no pathogenic bacteria were seen, (ii.) those in which the Klebs-Löffler bacillus was recognized and (iii.) those in which bacilli, spirochætes and other organisms were present in conjunction with one another. For the second class isolation of contacts and immediate treatment of the patient were indicated. The third group was difficult, but a conclusion could be arrived at. In an epidemic in a small Australian town he had collected about 900 direct swabs. The result had been a great decrease in diphtheria admission as the children from whose fauces diphtheria bacilli had not been grown, had been excluded. Schick testing was unpracticable in general practice and toxin-antitoxin treatment was looked on with disfavour by the public. He held that direct examinations were of great value.

DR. BAKER MCLAGLAN (Wellington) thought that the punctures were a drawback in school work. It would be better if the number of punctures in immunization could be reduced.

DR. HARVEY SUTTON (Sydney) said that Commander Dudley had formulated good reasons why epidemics rose and died down again. The seasonal instance was marked in Australia as everywhere in the world. Cycles in infectious disease had not yet been explained, for example whooping cough five-yearly interval, mumps six-yearly interval and then a pandemic. Something in the organism itself must control the cycle factor. The decrease in diphtheria incidence was due partly to decreased birth rate. With increasing families the number of susceptibles increased. He thought that Schick testing was enhanced in value by omitting the preliminary Schick test in young children of, say, five to ten years and proceeding to immunize the whole of the group. Even the partial immunization, for example, two doses, would be effective as Dr. Dudley had pointed out. Contact of children in school automatically increased the number of immune. There were more susceptibles among country children than among city children.

PROFESSOR C. E. HERCUS (Dunedin) agreed that age dilution (the declining birth rate) was one of the explanations of decreasing diphtheria epidemics. In cerebro-spinal fever in the war when the percentage of carriers reached a certain warning level an epidemic was ahead. Dr. Dudley's finding for diphtheria was similar and was full of signficance. He felt with Dr. Sutton that it should be a routine to immunize all school entrants. The treatment of toxin by formaldehyde gave a maximum antigenic power with no toxicity. Tetanus toxoid was recommended as a routine prophylaxis. Similarly diphtheria toxoid would shortly be used and would prove more effective than the previous toxin-antitoxin mixture. In future all children at commencement of school life should be immunized. There would then be no need to worry about the later school ages. When the primary stimulus had been given, contact with massive infection resulted in a great antitoxic response. Tissue education was complete and the subject did not contract diphtheria. Simple primary stimulus by toxoid would solve the problem of future diphtheria epidemics. He paid a tribute to Dr. Lethbridge's interest in public health activity. The direct smear was certainly of great importance; general experience was in favour of culturing, but the former helped in the differential diagnosis.

SECTION VI.—OPHTHALMOLOGY.

Penetrating Wounds of the Eyeball.

DR. A. J. HALL (Dunedin) read a note on the pathological effects of penetrating wounds of the eyeball. He illustrated his remarks by reference to a series of about thirty-five cases with stereoscopic photographs and microscope slides collected from the clinic of Dr. John Marshall, of the Pathological Department of the Glasgow Eye Infirmary. He divided the effects resulting from infection of the eyeball by penetrating wounds into panophthalmitis, vitreous abscess or posterior endophthalmitis, anterior endophthalmitis, plastic irido-cyclitis and proliferative fibrosis arising from the cut tissues at the wound. He described the appearances in each of these groups and described the pathological changes accompanying them. In conclusion he referred to the use of the slit lamp and to the advantages resulting from its use in these conditions.

Retinitis Pigmentosa.

DR. CYRIL DIXON and DR. LEONARD J. C. MITCHELL (Melbourne) reported a series of three cases of *retinitis pigmentosa* occurring in one family.

DR. A. M. MORGAN (Adelaide) mentioned the history of two patients with *retinitis pigmentosa* in one family. Neither were able to talk properly, but hearing was perfectly normal in both. He mentioned another patient whose field of vision was not altered; there had been no alteration in the clinical appearance for over twenty years, the only trouble this patient had had was night blindness. No treatment had been used except Blaud's pills given occasionally. With reference to consanguinity being a factor in the ætiology, he mentioned a case in which the parents were first cousins. The eldest of the family of this marriage had *retinitis pigmentosa* and was stone deaf. The other members of the family had no retinitis, but all became very deaf, the deafness not coming on until about the age of twenty.

SIR JAMES BARRETT (Melbourne) said that he had had Wassermann tests carried out with the serum of all his patients. In the majority no reaction had been obtained. One of his patients whose sister had *retinitis pigmentosa* of a typical kind, had typical *retinitis pigmentosa* without pigmentation. In mentioning consanguinity as a cause he thought that medical men were inclined to put too much stress and attach too much importance to the bad effects following on the marriage of near relations. He pointed out that degeneracy had been found in the Pharoahs of the eighteenth dynasty. It had been the custom for the Pharoahs to marry their sisters. He mentioned that this period was the most notable period in Egyptian history. He warned medical men to be chary about advising against marriage of near relatives, for example, first cousins, till they had gone carefully into their history. If the history of both sides was good, there was no reason why they should not be married.

DR. A. J. HALL (Dunedin) said that he would like to know what degree of deafness was present in the patients referred to in Dr. Mitchell and Dr. Dixon's paper. In a patient whom he had shown, he was satisfied that deafness was of a catarrhal type. He thought speech defects were common and in the case mentioned the patient had not learned to speak until the age of seven. In this case also posterior capsular cataract had not developed until late in the disease. There had been no sign of cataract in 1913, but it had been present when he had reexamined the patient in 1926.

Carcinoma of the Limbus.

DR. Z. SCHWARTZ (Melbourne) reported a case of squamous celled carcinoma of the limbus extending over the cornea. He said that although a squamous celled carcinoma of the conjunctiva and limbus was not rare and many cases had been reported, in a search in the literature of the last ten years he had been unable to find the record of a similar case. Treatment had consisted in enucleation and deep X ray therapy. Dr. Schwartz included in his account of the case a pathological report by Mr. Henry Searby.

DR. H. F. SHORNEY (Adelaide) spoke on the treatment of carcinoma of the conjunctiva. He said that the coats of the eyeball were very resistant structures and that there was a temptation to try different methods of treatment, such as radium, before deciding to enucleate the eye. He had seen one patient in whom the conjunctiva was invaded by a small pimply growth; he had been tempted to advise excision of the growth, but it had afterwards been treated with radium. After some time as the other eye had started to water, he had enucleated the affected eye and had removed a wide area of conjunctiva. The growth had recurred and he had been compelled to remove the whole socket and the upper and lower lids in the end. He advised enucleation in all these cases.

DR. L. S. TALBOT (Timaru) had seen one patient who had had poor vision in the unaffected eye; in the good eye there had been a small growth close to the limbus with a history of three months' duration. The vision in this eye had been normal. He suspected it to be a malignant growth, had a piece excised and examined and it was found to be malignant. He recommended and did enucleation of the eye. He was glad to hear Dr. Shorney's opinion of the treatment.

DR. J. G. MACDONALD (Invercargill) was glad to hear Dr. Shorney's experience as to what ought to be done in these cases.

DR. A. G. TALBOT (Auckland) spoke on similar lines.

DR. W. E. CARSWELL (Dunedin) had had one case in a man of fifty years of age situated at the limbus like a small pterygium a millimetre in diameter and extending slightly on to the cornea. He had excised the growth and had taken care to remove a large area of conjunctiva; no recurrence of the growth had taken place since the operation nearly two years before.

DR. A. M. MORGAN (Adelaide) described a similar growth which he had excised, but it had recurred and he had been forced to enucleate the eye.

DR. A. J. HALL (Dunedin) described a case of a fleshy tumour mass extending from the conjunctiva on to the cornea six or seven millimetres in diameter. He had thought that it was malignant and had excised it. It had come away very easily, but on examination by Professor Drennan it had turned out to be a papilloma. There had been no recurrence.

SECTION IX.—PÆDIATRICS.

Blood Transfusion in Children.

DR. EDGAR H. M. STEPHEN (Sydney) read a paper on blood transfusion in young children. He based his remarks on results obtained in a small series of cases at the Royal Alexandra Hospital for Children. Eleven children suffering from severe forms of gastro-enteritis had received intraperitoneal transfusions of citrated blood; four of these recovered. Six children suffering from acute rheumatism with persistent anæmia had received transfusions. Enucleation of the tonsils had then been performed and recovery was complete. The same result had been achieved in two cases of chorea. Good results had been obtained with transfusion in idiopathic purpura, but life had not been prolonged when transfusion was used as a forlorn hope in protracted meningococcal meningitis.

DR. A. JEFFERIS TURNER (Brisbane) said that he hoped that dermatitis and acute rheumatism would not always be treated by blood transfusion. He had seen cases of hæmorrhages from the bowel of new-born infants cured by subcutaneous injection of blood taken from the parents. Apart from this his experience of blood transfusion was small.

DR. H. L. STOKES (Melbourne) had seen striking cures from blood transfusion. The method usually used was that of citrated blood, but in some schools they had obtained better results from the use of pure whole blood. He quoted experiments of Bruce Robertson who had introduced the method of exsanguination. The blood was taken from the child very slowly till the child became partially exsanguinated and the pulse weakened, then the new blood was given very slowly. At the end of the operation it was endeavoured to give a little more blood

than had been taken away. He had seen good results from toxæmia of severe burns in erysipelas, septicæmia and in poisoning.

DR. F. M. SPENCER (Hamilton) mentioned a group of cases of pyæmic staphylococcal infection in which he obtained no good results.

DR. J. H. GRAHAM ROBERTSON (Napier) in referring to the case of exfoliative dermatitis mentioned by Dr. Stephen wished to record the fact that he had obtained good results in chronic skin diseases from blood transfusion.

DR. E. H. WILLIAMS (Dunedin) in referring to the intraperitoneal method of giving whole blood, quoted experiments done on animals in which blood was recovered from the thoracic duct twenty minutes after it had been injected into the abdomen. This showed that the absorption was rapid. It was not necessary to type the blood particularly when treating hæmorrhage of the new-born.

DR. G. H. USSHER (Timaru) said that in acute arthritis he had tried intravenous injection of saline solution, "Eusol" and "Mercurochrome" with no effect. He had used citrated blood with good results. In a case of ruptured ectopic gestation he had taken the blood from the abdomen and injected it into the median basilic vein with good results.

Dr. Stephen in reply thought that Dr. Jefferis Turner would use blood transfusions in acute rheumatism before long. He was of the opinion that all patients suffering from acute rheumatism did not require this treatment, but there were some who were treated with salicylates without avail and responded well to transfusion. There was no risk in doing transfusions provided the donors were typed. He did not think that transfusion required much manual dexterity, but it certainly took a good deal of time.

He stated that he had had no bad results. Occasionally a rise of temperature had been observed, but no rigors. In young children he had found a light general anæsthetic advisable, but with the help of the nurse and local anæsthesia children of five years and upwards could usually be managed.

In reply to a question regarding technique he stated that he always used gravity. The apparatus was well coated with paraffin.

SECTION X.—NAVAL AND MILITARY MEDICINE AND SURGERY.

Work at an Advanced Dressing Station.

MAJOR KENNETH F. GORDON (Te Aroha) read a paper embodying his experiences at an advanced dressing station in October, 1918, when the New Zealand Division in France captured Crevecoeur. He said that the essentials of an advanced dressing station were the maintenance of communication with regimental aid posts, the rapid collection and evacuation of casualties, the maintenance of adequate supplies and efficient attention to the wounded. At the same time it was essential that the keynote of an advanced dressing station should be evacuation. Major Gordon showed maps of the district over which the action had taken place and described in detail the situation of the several component parts of the medical unit. He reproduced in full the order of the Assistant Director of Medical Services and described how his instructions had been carried into effect. He quoted numerous reports and orders which had been received during the course of the action. He pointed out that the notes he had presented, gave evidence of the close communication which was established with regimental medical officers and of the requirements of these officers in moving warfare. A noticeable feature was the solicitude of various officers for the condition of their men, their rations and their fatigue. He thought that this solicitude was essential to army discipline.

After MAJOR-GENERAL BARBER, LIEUTENANT-COLONEL HARDIE NEIL, COLONEL O'NEILL and LIEUTENANT-COLONEL MCCORMICK and CAPTAIN BAXTER had spoken, Major Gordon replied.

SECTION XII.—RADIOLOGY.

Malignant Disease of the Skin.

DR. P. CLENNELL FENWICK (Christchurch) read a paper on malignant disease of the skin. He enumerated the peculiarities of and the differences between the two varieties of skin cancer, basal celled and squamous celled tumours. He pointed out that the former was painless, unless it became infected and that the latter was painful after ulceration had commenced. As a result of observation, extending over many years, he had concluded that around every malignant ulcer there was an area about one millimetre wide which was insensitive to the prick of a fine needle. He had not seen sepsis in a true rodent cancer, but it was common in the squamous variety. This was probably explained by the fact that rodent cancers retained a covering of epithelial cells which acted as a protection against the action of bacteria. He believed that the vulnerability of the tissues to cancerous invasion was dependent upon alteration or destruction of the trophic nerve supply to the invaded area. From this he had built up a theory of the causation of cancer of the skin. According to this theory an area of the skin, being destroyed by chronic irritation, became functionless. The trophic nerve was no longer required for this area and it atrophied. Hence the area of anæsthesia around a rodent ulcer. This dead area might be the point of attack by the cancer virus. The virus by its action on the invaded tissue produced its required specificity chemical factor. Cancer was painless because the nerve supply to the invaded area was abolished. Later pain was due to secondary septic inflammation. Dr. Fenwick concluded by discussing glandular involvement in its relation to bacterial invasion.

Demonstration of Skiagrams.

DR. H. F. PRAAGST (Victoria) showed some interesting films. The series depicted calculus in the right ureter with dilatation of the ureter and hydronephrosis, bilateral polycystic kidney with dilatation of the pelvis, a poor filling defect of the renal pelvis which was filled completely in the second skiagram, multiple polypi of the large bowel with complete involvement, clinically a polypus was projecting from the rectum, a skiagram of the chest showing well developed substernal goitre in a girl suffering from exophthalmic goitre, the thyreoid was subsequently removed surgically. There was another skiagram of a large hydatid cyst of the lung. A skiagram of a rare condition was exhibited. There was a filling defect of the cardiac end of the stomach in a woman who had symptoms of gastric carcinoma; at operation a myoma had been found at this site. A further interesting case was that of a neoplasm of the spine diagnosed with the aid of "Lipiodol" injection; in the antero-posterior view the "Lipiodol" could be seen deflected to the left at the level of the sixth dorsal vertebra, in the body of which there was an area of absorption on the right side with a soft shadow fading into the lung tissue at the same level. The condition was inoperable, but responded well to combined radium and deep therapy treatment. A further film was that of a lung with a small bronchiectatic cavity rendered visible by intralaryngeal injection of "Lipiodol." There was no evidence of tuberculous infection of the lung stereoscopically. The patient had swallowed a chop bone sixteen years previously, had suffered from hæmoptysis at short intervals for years and was quite convinced in his own mind that he had pulmonary tuberculosis. From the above examination, however, he was reassured on that point. Moreover, he improved considerably after the diagnostic injection of the "Lipiodol."

A film illustrated an obstruction with dilatation of the duodenum with residue in the stomach; at the operation a mass of tuberculous glands pressing on the third part of the duodenum was found.

DR. W. R. STOWE (Palmerston North) showed a skiagram of a skull in which the semicircular canal was clearly visible.

DR. D. F. MYERS (Wellington) showed a series of films illustrating various pathological conditions of the colon.

Proceedings of the Australian Medical Boards.

VICTORIA.

THE undermentioned have been registered under the provisions of Part I. of the *Medical Act*, 1915, as qualified medical practitioners:

Fallon, Robert Hume, M.B., C.M., 1881, M.D., 1887 (Aberdeen), 343, Bridge Road, Richmond.

Peterson, Laurence Lindley Pollock, M.R.C.S. (England), L.R.C.P. (London), 1926, St. Ninian's Road, Middle Brighton.

Books Received.

HISTORY TAKING AND RECORDING, by James A. Corscaden, M.D.; 1926. Paul B. Hoeber, Incorporated. Post 8vo., pp. 84. Price: $1.50 net.

THE LIFE AND TIME OF ADOLF KUSSMAUL, by Theodore H. Bast, Ph.D., with a Foreword by William Snow Miller, M.D., D.Sc.; 1926. New York: Paul B. Hoeber, Incorporated. Post 8vo., pp. 130. Price: $1.50 net.

THE TREATMENT OF FRACTURES WITH NOTES UPON A FEW COMMON DISLOCATIONS, by Charles Locke Scudder, A.B., Ph.B., M.D., F.A.C.S.; Tenth Edition, Revised; 1926. Philadelphia: W. B. Saunders, Company; Melbourne: James Little. Royal 8vo., pp. 1240, with illustrations. Price: £3 net.

JACOBI'S ATLAS OF DERMOCHROMES WITH ENTIRELY NEW AND ORIGINAL TEXT, by Henry MacCormac, C.B.E., M.D., F.R.C.P.; Fourth Edition; in Two Volumes; 1926. London: William Heinemann (Medical Books), Limited. Imperial 8vo., pp. 205, with illustrations. Price: £5 5s. the set.

A SOLUTION OF THE SEPTIC PROBLEM AND A NEW THEORY OR IMMUNITY, by D. Montgomerie Paton, L.R.C.P., L.R.C.S. (Edinburgh); 1927. London: Baillière, Tindall and Cox. Crown 8vo., pp. 212. Price: 7s. 6d. net.

POPULAR EDUCATION IN PUBLIC HEALTH, by W. Allen Daley, M.D., B.S., B.Sc. (London), D.P.H. (Cambridge), and Hester Viney, S.R.N.; 1927. London: H. K. Lewis and Company, Limited. Crown 8vo., pp. 218. Price: 6s. net.

Medical Appointments.

Dr. John Alexander Love (B.M.A.) has been appointed by the Governor's Deputy, South Australia, to be an Honorary Commissioner to inquire into and report upon midwifery and diseases of women in the Dominion of Canada and the United States of America.

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Dr. Victor Hurley (B.M.A.) has been appointed an Acting Member of the Police Medical Board, Victoria.

* * * *

Dr. James Sydney Alexander Rogers (B.M.A.) has been appointed Acting Medical Superintendent of the Hospital for the Insane, Beechworth, Victoria.

* * * *

Dr. Frederick Steele Scott (B.M.A.) has been appointed Honorary Dermatologist at the Mental Hospital, Parkside, South Australia.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xx.

ADELAIDE HOSPITAL: Pathological Registrar.

CHILDREN'S HOSPITAL, CARLTON, VICTORIA: Honorary Anæsthetist.

DEPARTMENT OF PUBLIC HEALTH, VICTORIA: District Health Officers (2).

MARRICKVILLE DISTRICT HOSPITAL, SYDNEY: Resident Medical Officer.

SYDNEY HOSPITAL: Clinical Assistant to the Ear, Nose and Throat Department.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester United Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Members accepting appointments as medical officers of country hospitals in Queensland are advised to submit a copy of their agreement to the Council before signing. Brisbane United Friendly Society Institute. Stannary Hills Hospital.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia. Yarloop Hospital Fund.
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

MAR. 29.—New South Wales Branch, B.M.A.: Council (Quarterly).
MAR. 31.—New South Wales Branch, B.M.A.: Branch (Annual).
MAR. 31.—Queensland Branch, B.M.A.: Branch.
APRIL 1.—Queensland Branch, B.M.A.: Branch.
APRIL 5.—New South Wales Branch, B.M.A.: Council (Election of Officers and Standing Committees).
APRIL 5.—Tasmanian Branch, B.M.A.: Council.
APRIL 6.—Victorian Branch, B.M.A.: Branch.
APRIL 6.—Western Australian Branch, B.M.A.: Council.
APRIL 7.—South Australian Branch, B.M.A.: Council.
APRIL 8.—Queensland Branch, B.M.A.: Council.
APRIL 11.—New South Wales Branch, B.M.A.: Organization and Science Committee.

Editorial Notices.

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